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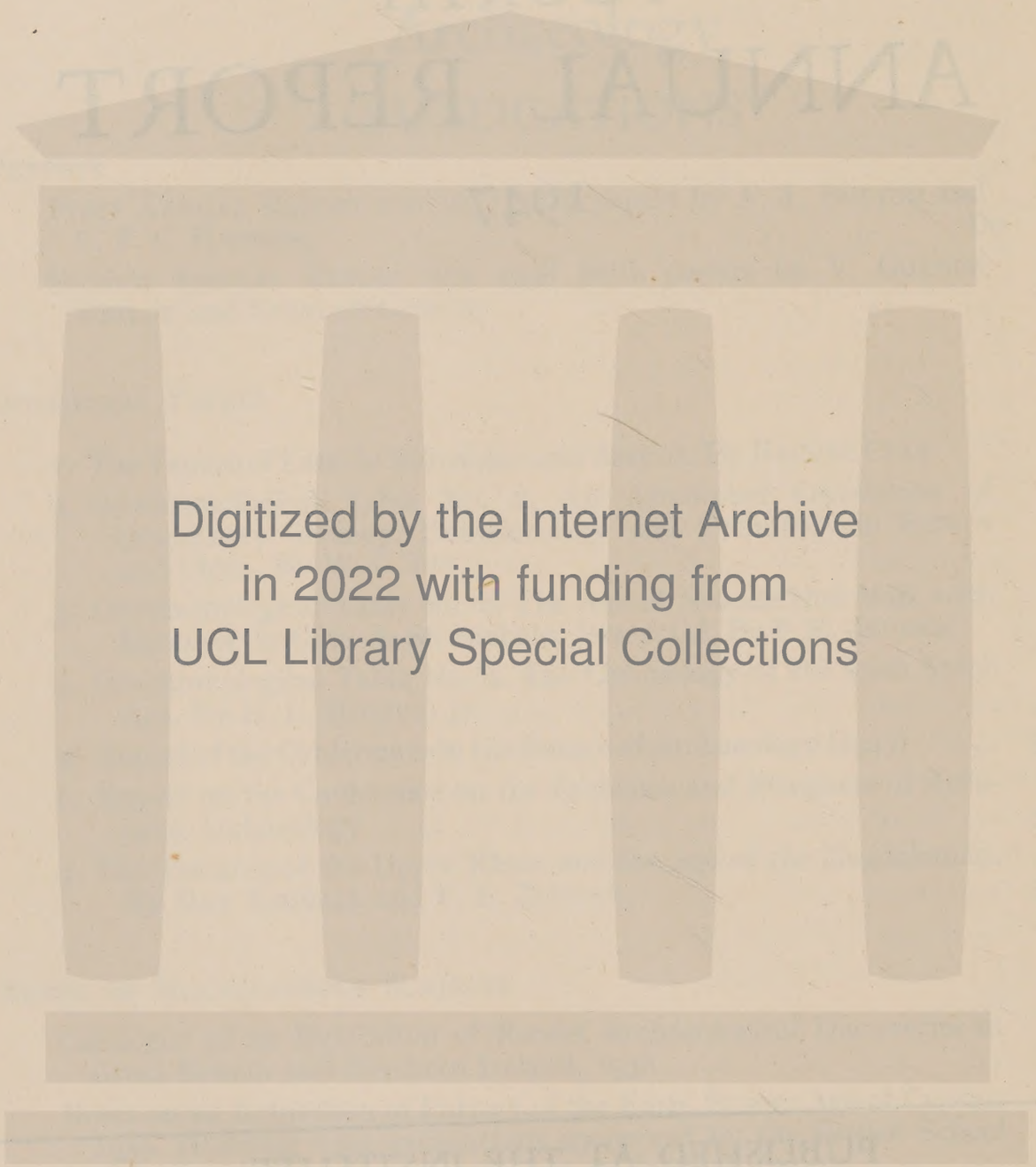

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SESSION, 1946–47

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* Representing the Society of Antiquaries of London.

STAFF

Professor V. G. Childe, D.Litt., D.Sc., F.B.A., F.S.A. (*Director and Professor of Prehistoric European Archaeology*)
Professor F. E. Zeuner, D.Sc., Ph.D. (*Professor of Environmental Archaeology*)
Professor M. E. L. Mallowan, M.A., F.S.A. (*Professor of Western Asiatic Archaeology*)
E. Pyddoke (*Assistant in Department of Prehistoric European Archaeology*)
Mrs. Maxwell-Hyslop, F.S.A. (*Assistant in Department of Western Asiatic Archaeology*)
Miss Ione Gedye, B.A. (*Technical Assistant, Repair Department*)
Miss O. Starkey (*Technical Assistant, Repair Department*)
M. B. Cookson (*Photographic Assistant*)
Mrs. Gell (*Assistant in Drawing Department*)

Miss K. Kenyon, M.A., F.S.A. (*Secretary*)
Miss M. Eates, B.A. (*Assistant Secretary*)
Miss J. du Plat Taylor, F.S.A. (*Librarian*)
Miss G. Talbot, B.A. (*Assistant Librarian*)

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Annual Report for 1946-47

THE past Session, 1946–47, is the first during which the Institute has been able to operate with the ampler resources provided by the Senate from funds allocated by the University Grants Committee. In the Report for 1945–46 Miss Kenyon has related the steps by which the new position was achieved and how the new regular posts were filled.

The present Director took up office in September, 1946, and delivered his Inaugural Lecture, printed in the previous Report, at the beginning of the Session. He has directed the teaching work in the Department of European Archaeology since that date, but Professor Zeuner lectured on Lower Palaeolithic cultures as well as in the courses in Enviromental Archaeology, while Miss K. Kenyon, Secretary, dealt with the Iron Age. Professorships in Western Asiatic Archaeology and Indian Archaeology were only constituted in the course of the Session. In April, 1947, M. E. L. Mallowan was appointed part-time Professor of Western Asiatic Archaeology and took up office in May, 1947. His Inaugural Lecture, delivered at the beginning of the 1947–48 Session, is printed in the present volume.

Mr. K. de B. Codrington, Director of the Indian Museum, has been invited by the University to accept the part-time Chair of Indian Archaeology but his commitments in connection with the Exhibition of Indian Art, in the Royal Academy, prevented him accepting the invitation during this Session. Provision was made in the Estimates for a Lectureship in Palestinian Archaeology but the filling of the post had naturally to be postponed till the Professor of Western Asiatic Archaeology was installed. In the meantime Miss K. Kenyon continued to act as Honorary Curator of the Palestinian Collection. Mrs. Rachel Maxwell Hyslop, F.S.A., has acted as part-time Assistant in the Department of Western Asiatic Archaeology during the Session.

The expansion and increased use of the Library made additional staff desirable and Miss Talbot was appointed Library Clerk in October. For a similar reason a Technical Assistant was appointed in the Repair Department. The Drawing Department has been in

charge of Mrs. Gell, as a part-time Assistant. Mr. Pyddoke acted as part-time Assistant in the Department of European Archaeology and was engaged in arranging and cataloguing the relevant section of the collection. Miss Margot Eates was appointed Assistant Secretary from November 1st.

Teaching and Lectures

A course of lectures covering in two years the requirements of the Regulations for the Academic Diploma in Archaeology, Europe, Prehistoric, has been established, designed also to meet the needs of Archaeology and Anthropology students for the B.A. General degree. The Director, with Professor Zeuner and Miss Kenyon, gave a general course on European Prehistory and an advanced course on the Archaeology of the British Isles, while Professor Zeuner dealt with prehistory from the standpoint of geology, climatology and palaeontology. The Director gave in addition ten lectures on the Methods and Aims of Archaeology, in the Autumn, and ten on the History of Prehistory, in the Spring Term. Surveying was dealt with in the Summer by Mr. W. J. Varley, while Mrs. Crowfoot, Miss Pincombe, Mr. McBurney and Mr. Coghlan lectured on Elementary Technology, with Demonstrations. The Repair and Treatment of Materials, Photography and Drawing were taught by the Institute staff, assisted by Dr. Moss, of the British Museum. Finally, Miss Kenyon gave a course of ten lectures on the Archaeology of Roman Britain, at the request of the Professor of Ancient History.

In addition, the following public lectures were given:—

"Archaeology as a Social Science" (Professor Childe's Inaugural Lecture, printed in the Last Report); "The Chronology of the Late Bronze Age and Early Iron Age in Europe," by Dr. H. O'Neill Hencken, F.S.A., Curator of European Archaeology in the Peabody Museum, Harvard University; "Climate and Early Man in East Africa," by Professor F. E. Zeuner.

The Institute's premises are being increasingly used for meetings by archaeological societies, in particular by the Prehistoric Society. Under the latter's auspices Monsieur Coutier gave a highly instructive lecture and demonstration of the methods used by prehistoric man in the manufacture of stone implements.

Students

One student registered for the Ph.D. Degree continued his registration. Seven have been registered at the Institute for the

Academic Diploma in Archaeology, of whom two sat for the examination in June and were awarded the Diploma, and one for Western Asiatic Archaeology. Ten students have been regularly attending courses in the Technical Departments. In all, twenty-six occasional students have paid fees for individual courses, while thirteen attended the courses on Prehistoric Archaeology as Intercollegiate students.

A full day's excursion to Lewes was arranged in the early summer to enable students to visit the Sussex Archaeological Society's excellent museum and barrows, lyncheted fields and the hill-fort on the Caburn. Second year students went for a week-end with the Director to visit monuments near Avebury. Each term visits were arranged to the British Museum, where the staff of the British and Mediaeval Department very kindly made accessible to our students representative selections from the National Collections that are not now on public exhibition.

Collections

The most valuable relics in the keeping of the Institute are of course the Palestinian Collection. This has been enlarged during the present year by a valuable gift from the late Sir Charles Marston's collection, presented to the Institute by Lady Marston. The Honorary Curator has devoted such time as can be spared from the administrative work of the Secretary, to the arrangement and cataloguing of this magnificent assemblage but it naturally demands the more regular attention that the Lecturer in Palestinian Archaeology, to be appointed next Session, will be able to devote to it. In the West European collection serious gaps became apparent when attempts were made to use it for teaching purposes in connection with the Professor's courses—gaps not noticed while the Honorary Director was also Director of the London Museum. It is probably not the function of the Institute to compete with National and Local Museums in amassing either show pieces or complete assemblages from excavated sites. But at least for teaching purposes a type series of stone and bronze implements, pottery and ornaments is essential. Actually, the Institute possessed no Upper Palaeolithic tools at all, and even the British Museum collection is defective in certain periods or cultures. It has been possible partially to fill this gap by the purchase of good series arranged and classified by the Abbé Bouysonnie and a gift from the Wellcome Foundation. The Humbla Collection, presented to the Institute by Dr. W. Hildburgh during the war, has proved to provide a very complete basis for the illustration of the New Stone Age in

Scandinavia, while a loan of bronze objects from the British Museum enables students to accustom themselves to the feel of metal objects. There remain, however, serious gaps, notably in respect of palaeolithic and mesolithic flint work and later pottery, that it is hard to fill when foreign travel is impossible. Mr. Pyddoke devoted his time to cataloguing the stone implements and the valuable collection of sherds from Maiden Castle, Prae Wood and other collections made by the first Director. The still more valuable collection of Roman pottery awaits the appointment of a Reader or Professor in the Archaeology of the Roman Provinces—a post recommended by the Board of Studies in Archaeology.

Publications

During the Session the Third Annual Report, covering the years 1938–46, was issued and Occasional Papers No. 7, *The Terraces of the Upper Rhine and the Age of the Magdalenian*, by Day Kimball and F. E. Zeuner.

Deaths

During the Session the Institute lost two good friends and benefactors who were also members of the Management Committee, Mr. E. S. M. Perowne who had acted as Treasurer for the Appeal Committee and Mr. Reckitt.

Library

Annual Report 1946-1947

MISS G. C. TALBOT was appointed Assistant Librarian and took up her duties on October 26th. She had previously given voluntary part-time assistance in the library for several months.

The Librarian was absent in Cyprus on Study leave during the Spring term: the Assistant Librarian acted as Librarian during this period.

Some new steel shelving was added to the Library during the summer, to accommodate the expansion in the European and Western Asiatic sections. Cataloguing of books and the preparation of the author index was completed during the year. Some material was collected for a Subject Index but is not yet available for use.

The *Lantern Slide* collection was taken over by the Library in July. New cabinets were installed and the collection is in process of cataloguing on a Classified scheme.

Volumes bound, 398.
Volumes lent, 1,587. Highest month, May, 208. Lowest month, August, 41.
Books borrowed from outside libraries, 103.
Volumes added to Library, 389.
Pamphlets added, 1,016.
Periodical volumes added, 300.
Exchanges set up, 19. Six of these are exchanges taken over from Royal Archaeological Institute, which is no longer carrying on.

Volumes presented.—62, from the following donors:

Roland Austin
Archaeological Survey of India
British Academy
British Museum
British School at Rome
Carnegie Institute, Washington
Professor V. G. Childe
Miss du Plat Taylor
Sir Frederick Kenyon
The late Harold Peake (bequest)
E. Pyddoke
Reading University Library
G. Rönnell
Miss V. Royds
Miss V. Seton Williams
Professor Sidney Smith

Miss M. Eates
Dr. H. A. Fawcett
Professor Fleure
Professor Daryll Forde
Geological Society
F. H. Summers
Miss G. C. Talbot
Dr. R. E. M. Wheeler
Professor F. E. Zeuner

Pamphlets Presented.—969, from the following donors:

A. J. Arkell
Anglesey Antiquarian Society
British Council
British School at Athens
Professor Childe
C.I.B.A.
H. H. Coghlan
Mrs. M. A. Cotton
F. Cottrill
O. G. S. Crawford
Miss M. Eates
Henry Field
H. Godwin
H. St. George Gray
Lincoln Archaeology Committee
Dr. M. A. Murray
R. Nicholson
K. Oakley
The late Harold Peake (bequest of over 880 pamphlets and off-prints)
Miss K. M. Richardson
R. B. Sergeant
Societé Jersaise
Mr. Stiles
Dr. R. E. M. Wheeler
Professor Zeuner

Volumes on Permanent Loan.—30 from:

British Academy
Dr. R. E. M. Wheeler

Report of Repair Department

1946-47

TEACHING has absorbed a larger proportion of the time of this Department than in any previous session. Not only have the Diploma students attended the compulsory course in pot mending, but a far larger number has been sufficiently interested in the technical side of archaeology to come to the Department for individual instruction in all branches of restoration work.

During the year seven students took the short compulsory course and twelve the longer individual courses. Of the latter, three were sent to us by museums; and for one, who was going to work in Rhodesia, an intensive course was arranged.

In addition to the teaching, repair work was undertaken for three private individuals, one Excavation Committee and three museums. The largest and most difficult commission was the extraction from lumps of boulder clay, and restoration, of a number of Saxon pots from a cemetery, undertaken for the Lincoln Museum.

Work has also been continued for the various Departments of the Institute. Upwards of sixty pots and specimens of the Atchana group were restored for the Western Asiatic Department, and cleaning and restoration work was continued on the Palestinian collection.

Work on models of Pleistocene mammals for the Geochronological Department has been continued, *Dama clactonianus*, Cave Lion, Reindeer and Saiga Antelope being added to the existing collection, and a diorama of the loess steppe, showing a group of *Przewalskii* horses and cave lions, has been completed.

It has now been found possible to produce accurately painted casts of the animals in the Institute's collection, and these are available for the use of museums and schools, at from £3 to £5 each. Miss M. Howard, an ex-student of the Repair Department, has given invaluable help in painting these animals under the direction of Professor Zeuner.

The additional equipment acquired by the Department during the year has augmented its efficiency both for teaching and repair work. Benching has been installed instead of tables in one room, thus facilitating the accommodation of a greater number of students. A drying oven and the apparatus for the electrolytic cleaning of metal objects have also been installed.

A collection of notes on the treatment of archaeological objects in the field and the laboratory has been compiled from different sources and is available to students of the Department.

IONE GEDYE.

The Department of Environmental Archaeology

Report for 1946-47

By Professor F. E. Zeuner

I. GENERAL REPORT

Activities

Work in the Department was concentrated on re-equipment and improvement of teaching facilities. In the course of the year, the correspondence of the Department assumed proportions which, together with routine duties, made it difficult to carry out other work. Although an effort was made to deal with enquiries and samples submitted for investigation, their number was unexpectedly large, and the available staff inadequate, so that considerable delays were inevitable. It is hoped that the forthcoming appointment of a new technical assistant will make it possible to catch up with arrears in the course of the year 1947–48. No systematic research work could be carried out for lack of time, but I was enabled to attend the First Pan-African Congress on Prehistory in Nairobi as Delegate of the London University.

Staff

In the laboratory, Mr. I. W. Cornwall helped regularly in a part-time capacity. During my absence in Africa, he also gave the course in Environmental Archaeology. Miss M. Howard attended to the collections of bones and shells. Mr. M. Godden worked as a voluntary assistant for three months, chiefly on the card index of geochronological literature.

Laboratory

Re-equipment continued, but by the end of the year we were

still waiting for some essential chemicals and glass-ware to be delivered.

Collections

In view of the importance of visual and practical teaching, much attention has been paid to the improvement of the teaching collections. Experience has shown that few students have the time to spare for practical work or tutorials in addition to the course. It is therefore desirable that samples of raw materials, soils, specimens of bones, shells etc. should be available in sufficient numbers for all students to handle them while the course is being given. Many specimens have been added to the teaching collection, thanks to donations by Miss M. Howard, Mr. Day Kimball, Dr. L. S. B. Leakey, Mr. Maitland Muller, and others. Thirty-two days were spent in the field for the purpose of collecting material and studying sections on behalf of the Institute.

An addition to the existing teaching sets is one of the species of mollusca as found in archaeological deposits. As in the case of the other teaching collections, the students are not supposed to study them in the hope of learning to do their own determinations, but to acquaint themselves with the type of material that their excavations are likely to produce and which is used by various subsidiary sciences in the reconstruction of the environment of early man.

Since bones convey little to the non-expert, the collection of scientifically reconstructed models of Pleistocene mammals (one twelfth natural size) has been enlarged; it now comprises the Mammoth and the Straight-tusked Elephant, the Woolly Rhinoceros and Merck's Rhinoceros, the Pleistocene Elk and the Swanscombe Fallow Deer (this was exhibited at the Royal Society), the Steppe Bison and the Aurochs, the Saiga Antelope and British Reindeer, Przewalski's wild Horse, and Cave Lion, Beaver, Arctic Hare and Arctic Fox. Three dioramas have been completed: (1) a loess steppe scene in Moustierian times, (2) a cold forest in early Mesolithic times, and (3) a winter scene in Starunia (Carpathians) illustrating a hunting ground of the type frequented by the Magdalenians.

This work has been carried out in conjunction with the Repair Department, and thanks are due to Misses M. Eates, I. Gedye and M. Howard for patient co-operation. Mr. Parsons of the British Museum (Natural History) gave us valuable technical advice and Mr. Bevan (Central School of Arts and Crafts) obliged us by criticising the animals from the artists' point of view.

II. TEACHING AND RESEARCH

Teaching in the Department covers subjects (1), (4), (7), and (8) of the Academic Post-graduate Diploma in European Archaeology (Prehistoric), but the courses are open to other students.

A. *Environment of Early Man and Chronology*

1st term: Geological or life-less environment (minerals, ores, rocks, soils, physiography, with special reference to raw materials used by early man).

2nd term: Living environment (fauna and flora contemporary with early man, human palaeontology and osteology, raw materials and food derived from animal and plant kingdoms).

3rd term: Climate and early man (climatic conditions in Pleistocene and Postglacial times and how they are determined; study of important type sections).

4th term: Relative and absolute chronology of early man (sequence of climatic phases in various parts of Europe and the Mediterranean as deduced from deposits, soils, fauna and flora. Methods used in obtaining absolute ages: tree-rings, pollen analysis and varve analysis, sedimentation and weathering estimates, astronomical scales, radioactivity methods. Various tentative time scales and their reliability).

5th term: Individual tuition in special subjects to suit requirements of students (simple laboratory tests, work on teaching collections, methods of taking samples.)

B. *Lower Palaeolithic*

1st year students: Distinction of natural and artificial flint fractures. Methods of fracturing stone, especially flint, and other types of rock (links up with "Environment" 1st term). "Eoliths," Abbevillian, Acheulian, Clactonian, Levalloisian, Tayacian and Moustierian typology.

2nd year students: Important Lower Palaeolithic sites, especially in Britain, introduction to literature on the subject, work on collections (links up with "Environment" 3rd term).

C. *Advanced Tuition*

Research on archaeological deposits, soil sections, faunal remains. Three students carried out advanced work, two of them in connection with their own excavations.

In addition, two lectures were given on Climate and Early Man in East Africa. Two excursions were made with students. Six other lectures were delivered outside the Institute.

Enquiries and Research Connected With Excavations

Thirteen requests to study samples submitted to the Institute were accepted.

Three hundred and two samples were analysed or determined in the Department.

Fourteen further enquiries could be answered by letter after investigations not requiring work in the laboratory.

Among these were a large number of samples and specimens from "Henge" sites at Dorchester near Oxford, submitted by Mr. R. J. C. Atkinson and Mrs. Stuart Piggott. These were studied jointly with Messrs. I. Cornwall and R. Summers. Others came from Ipswich, the Scilly Islands (submitted by Rev. H. A. Lewis), Channel Islands, Palestine, etc.

Other Research

Mr. I. W. Cornwall investigated a gravel pit in Hertfordshire in which artifacts were found. A description of the site and the artifacts will be found in this *Report*, p. 39.

One paper was published in 1946–47:—Time and the Biologist, *Discovery*, London (7), (8): 242–249, 256.

Report on the Pan-African Congress on Prehistory, Nairobi, January, 1947

The Congress was formally opened in Nairobi Town Hall on January 14th by His Excellency the Governor of Kenya, Sir Philip Mitchell. The proceedings included discussions of Quaternary fauna and climate (environment of early man), papers on the Old Stone Age of various parts of Africa, symposia on fossil apes and man in Africa and another on marine terraces in relation to the Stone Age, and a discussion on prehistoric rock paintings. The writer contributed three technical papers and gave a public lecture on *Climatic changes and Early Man* at Arusha, Tanganyika, on the expedition to Olduvai. He also served on the Committee on the Plio-Pleistocene Boundary in Africa. The meetings lasted until January 23rd.

The session itself was preceded by several days of informal meetings and work at the Coryndon Museum, and a two-day excursion

to Stone Age sites in the Great Rift Valley. It was followed by a six-day excursion to Tanganyika where the famous Olduvai Gorge and rock-paintings in prehistoric shelters at Kisese were visited.

While waiting for the return passage I accepted an invitation by Mr. Raymond Hook of Nanyuki, the well-known animal collector and expert on Mount Kenya, to visit the mountain. Further archaeological and environmental studies were carried out on this occasion which have bearing on the problem of correlation between East Africa and Europe. Frost soil formations were found at 14,000 feet, as well as ancient moraines, which may prove to be of value in Stone Age chronology.

About 60 delegates attended the Congress, representing 26 countries. The representation of African countries was practically complete; South Africa alone had sent twelve delegates. Of non-African countries Britain was represented by four delegates, Professor Le Gros Clark (Oxford), Miss D. M. A. Bate and Dr. K. P. Oakley (Natural History Museum) and myself (London University). The weak representation of the mother country was repeatedly commented upon and generally regretted. France had sent two delegates, Denmark, Sweden, Palestine, Spain, U.S.A. and Ceylon one each.

Field-marshal Smuts was prevented from attending owing to the Royal Visit, but he invited the Congress, which has been made a permanent institution, to meet again in South Africa in 1951.

The Congress was extraordinarily successful thanks to Dr. Leakey's organising abilities and to the excellent attendance. It has certainly been of great benefit to African Prehistory.

Among the resolutions adopted was one recommending the institution in the near future of an Archaeological Survey for British East Africa, a country which has made important contributions to African prehistory. It was suggested that such survey should enlist the services of a Pleistocene geologist and a palaeontologist. The adoption of standard terms for the African Stone Age and Climatic Phases was recommended.

Use was made of the opportunities afforded by the Congress and expeditions to collect a large number of prehistoric implements and samples of sections for teaching collections of the Institute of Archaeology. Material for research purposes was brought home, to be studied in the Department.

Report of the Photographic Department

1946-47

In the second year after the World War II the work of the Photographic Department has been proceeding evenly. Materials such as cut film, bromide paper and chemicals are still difficult to obtain, indeed more difficult than just after the war. The project of venturing into the domain of colour printing by the dye transfer process has accordingly been postponed, but a small quantity of colour film has been secured in order to keep the Institute's claim for a quota open. Accordingly, our efforts have been principally devoted to accelerating the delivery of ordinary commissions and improving teaching methods.

The several departments of the Institute have made much greater use of the Photographic Department than previously, partly owing to the demand for slides by the new full-time heads of teaching Departments and to the preparation of dioramas by the Department of Environmental Archaeology in conjunction with the Repair Department. Extra photographs and prints have been required in connection with the preparations for the Institute's participation in the International Geological Congress in 1948. As shown below, over 1,400 lantern slides were prepared during the current year to make up gaps in the teaching collections, and photography still continued in connection with the projected Corpus of Palestinian pottery.

Local and provincial archaeological societies are increasingly using the Institute's Photographic Department, bringing small but interesting problems of a photographic kind. The larger learned societies and teaching institutes, together with museums in all parts of England, continue to support the Department, and every effort has been made to provide an efficient and speedy response to their commissions.

Equipment

The cost of equipment has increased substantially so that the prices for the articles most needed by the Department are extremely

heavy. Accordingly it is considered better to wait until there is a wider choice available at more moderate prices. However, an electrically heated dry-mounting machine has been acquired, with the ancillary equipment, a Helios spotlight has been purchased after trial of several types and four small portable floodlights have been added to our equipment. These can be used both away from the studio and in the studio as auxiliaries to the main source of light. Since vertical photography is largely demanded in the Department, a vertical fitment has been designed by Mr. M. B. Cookson; it is still in the drawing board stage but provided the requisite material comes to hand it should be in operation by the time the Report is printed. Finally, two more half-plate field cameras have been purchased for teaching purposes. It now becomes possible to allot a camera to each student carrying out the specialised Museum course.

Addition to Building

Even in the first year it appeared desirable to provide a small dark-room for the use of students. This idea developed into a plan for a full-sized dark-room with running water sinks, benches, developing tanks, printing box and enlarger.

Permits have been obtained for the purchase of beaver board and black-out and for the installation of a sink and external water supplies and it is hoped that the dark-room will be fully installed by 1947–8.

Record of Work Carried Out

	Number.
Private clients	27
Institutions, Museums, Colleges, Universities	10
Excavations	2
Lantern slides completed throughout the year	1,428
Prints, including enlargements	3,638
Tuition	2 Classes (1 of 5, 1 of 3)
Lectures requiring lantern	150
Lectures at I. of A. for other bodies	4

Additions to Existing Equipment

1. Electrically heated dry mounting machine.
2. 1-15 × 12 Merreths' patent trimming desk.
3. 2 ½ plate field cameras for student's use.
4. Helios spotlight.
5. 4 portable floodlights.
6. New dark-room (work in progress).
7. Purchase of safelights and full equipment for the new dark-room.

The Legacy of Asia

INAUGURAL LECTURE

DELIVERED ON OCTOBER 16TH, 1947

By PROFESSOR M. E. L. MALLOWAN

ONE hundred years ago, in the month of May, 1847, the first collection of Assyrian sculptures from the summer palace of Sargon at Khorsabad, was unloaded on the banks of the Seine and safely housed in the Louvre. A few weeks later, the first reliefs discovered by Layard in the Palace of Ashur Nasir Pal at Nimrud, reached the British Museum. The centenary of those discoveries was commemorated this summer in Paris at a ceremonial reopening of the Oriental galleries in the Louvre, under the auspices of the President of the French Republic. Those of us who were present on that historic occasion, were made glad by the sight of a glorious assembly of ancient monuments and relics which, in the course of a century of archaeological activity had been recovered from many different parts of Western Asia. After seven lean years of war, during which our archaeological labours had been almost entirely suspended, there was at last a feeling of elation as we entered in at the gateway to Palmyra, and passed on through gallery after gallery to rediscover the treasures of Iranian, Babylonian, Mesopotamian, Anatolian, Syrian and Palestinian civilisation. It seemed to me then that ancient Western Asia came to life again before our eyes, and that from it there emerged a sense of continuity in the Asiatic approach to life.

I remember how, as we passed through the Assyrian rooms, my eye was caught by a great stone relief, carved in the eighth century B.C.,[1] which represented a bearded hero strangling a lion—a symbolic rendering of man's triumph over the rest of the animal world, which had been depicted in very similar fashion on cylinder seals more than fifteen hundred years earlier.[2] Mortal combat against lions and bulls was a favourite theme of Asiatic imagery, and was

[1] Contenau, *L'Art de l'Asie occidentale ancienne*, Pl. XXXVIII.
[2] Frankfort, *Cylinder Seals*, Pls. XVI f, XVII a–j.

still remembered by the Greeks in their story of Theseus overcoming the Minotaur and in the labours of Hercules. The earliest echo of that long series of legends was retained in the epic of Gilgamesh which was already committed to writing by the Sumerians in the third millenium B.C. There we have a strangely moving story of a king of ancient Uruk, who travelled from the Euphrates to the Far Distant Cedar Mountains. After many adventures including the destruction of a monstrous demon and the wild Bull of Heaven, he suffered the loss of Enkidu, his dearest friend. In despair he then set out for the underworld to discover the truth about death. His last and final quest was a search for the plant which held the secret of life: for a brief moment he held that plant in his hand only to have it snatched away by a serpent. And so the secret of life and of death escaped him forever.

This preoccupation with the source of life was ever present in the minds of the ancient Asiatic peoples, no less than their sense of struggle for existence and survival. More than five thousand years ago, they began recording on their pottery the magical symbols which were to protect them against evil and to promote their welfare. That sense of continuity of which I spoke just now comes also from a study of those symbols, and, as we shall see, the effort to express their veneration for the hidden forces of nature led men to the discovery of a number of technical inventions which ultimately shaped the whole course of human history.

In the agricultural settlements which began to multiply all over Western Asia between 4000 and 3000 B.C., the art of painting pottery was extensively practised and had a deep influence on the subsequent artistic activities of mankind. Like all the higher achievements of man, the art of painting was a product of leisure. The organisation of ancient farming made it possible for a considerable number of persons within the community to devote themselves to tasks which were not merely concerned with the production of food. Long before the first historic dynasties, Asiatic potters were producing the most delicate vases, gaily bedecked with polychrome designs.[1]

Let us consider the symbolism and meaning of some of these designs. For example, on a fragment of a painted pot from Susa which can be dated approximately to the second century B.C., we

[1] "Excavations at Tall Arpachiyah," by Mallowan and Rose, *Iraq*, ii (1935) (cited as "Arpachiyah" hereafter), frontispiece and Pls. XV, XVIII, Fig. 61, No. 2; Langsdorff and McCown, *Tall-i-Bakun A* (University of Chicago, Oriental Institute, *Publications* LIX, 1942 (cited as *Bakun*), *passim*; *D.P.M.* xiii Pls. I–XXII.

have a picture of a swastika,[1] a sign which has been re-used over almost the entire civilised world at many different periods. It is exceedingly rare in Western Asia to come across a painted pot which is also inscribed—and that is what is so interesting about this piece, which is a fragment of a large storage jar. The inscription which is unfortunately incomplete mentions a proper name, *Ἰοάνου*—John, and the word *ἐφημερίας* which can refer to the daily offerings, or to the daily services in the temple. The last line of the inscription contains the reading *Ἀβιν[ν]αβ ου* which may contain a reference to *Ἄβιννα* the Greek name for an eastern suburb of Susa, or possibly should be read as the proper name *Ἀβιννάβου* signifying, the god *Nabu* is my father. Compound names containing the element *Nabu* were still common in the Seleukid period at Dura-Europos, which shows that this ancient Babylonian god, patron of the arts and writing was still venerated after the new tide of Greek learning had swept over the ancient East. This inscription therefore tells us that the the very ancient practice of dedicating offerings in the temples was still in force at Susa in the second century B.C., and that the swastika, a symbol no doubt of life and abundance still retained its sacred character.

For proof of the antiquity of the swastika you have only to look at the little prehistoric clay models of the Mother Goddess with pictures of the same symbol painted on their shoulders.[2] There can be little doubt that these figurines were conceived by the Asiatic peasants as endowed with the magical power of safeguarding and increasing the family. There are in fact also prehistoric painted designs illustrating the sexual act of reproduction:[3] and alongside them there are other abstract magical symbols which express the general concepts of reproduction and fertility. The significance of some of these pictures was obviously still understood more than three millennia later on in many different parts of the Near East.

Among the most interesting and frequently repeated designs were the cruciform patterns which were prominently associated with the dead on funerary pottery.[4] The symbol of Christianity is of immemorial antiquity. An elaboration of that pattern—the Maltese square, so beautifully applied to the prehistoric pottery of Assyria,[5]

[1] *D.P.M.*, XX, p. 98.
[2] *Bakun* Pl. VII, 1, 4; "Arpachiyah," Fig. 45, No. 10.
[3] *D.P.M.*, viii, Fig. 266 (from Tepe Ali Abad).
[4] "Arpachiyah," Pl. XVII.
[5] "Arpachiyah," Pl. XVIII; *Memoirs of the Archaeological Survey of India*, No. 43, Pl. XV.

D.P.M. = *Mémoires de la Délegation en Perse.*

Iran and Baluchistan, also figures as one of the earliest known written signs on the proto-Elamite tablets[1] which heralded the introduction of writing into Iran in about 3000 B.C. In fact, as I believe, the painted designs on the prehistoric pottery of Western Asia were the forerunners of writing. Many of these symbols had a definite meaning, and they implanted in man the notion of organising a system of signs which could represent human speech. Sometimes we can guess at the meaning of the patterns, sometimes we can understand them by comparing them in their different associations. On a sherd from Khazinah (Fig. 1) for instance,[2] you can see a row of dancers with

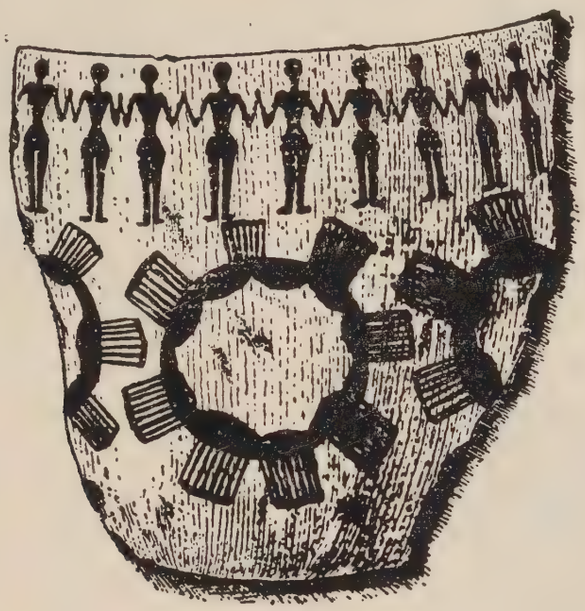


FIG. 1.

linked arms ready to tread out their pattern on the ground—a familiar sight to those who have lived in Asiatic villages. And below them you can see a curious geometric pattern. What does it represent? The answer may be that it traces out the rhythmic pattern which was to be danced upon the ground. There perhaps we have a picture which recalls the still familiar sight of a line of dancers swinging round to the strains of music in a slow circle, inwards, then outwards, then round. We may be sure that five millennia ago the peasants at their harvest festivals danced the same measures which they tread to-day.

[1] *D.P.M.*, vi, p. 111, sign No. 886 and tablets Nos. 201, 215 and 310; Ghirshman, *Fouilles de Sialk*, i, Pl. XCIII, S. 1624.

[2] *D.P.M.*, viii, p. 131, Fig. 254.

There are of course other designs which we can interpret with much more certainty, especially the complicated set of symbols which were associated with the worship of the Bull.[1] As far as we can judge, the Bull was, for the earliest settlers in northern Syria and prehistoric Assyria, the principal male god—perhaps a sky-god. And it is interesting to notice that on some of the earliest painted designs on Mesopotamian pottery you find star symbols interspersed between the horns.[2] The star, of course, was later on taken over in the early Sumerian script as the sign for "god": it had in fact a divine connotation long before writing was invented. It would be easy to go on offering interpretations of many more of the strange symbols which figure on the early pottery, and if anyone is sceptical about the content of these pictures, I would remind them that many of these signs still figure on Western Asiatic carpets to-day, and that the women in the north Syrian villages still attach a meaning to them.

The early artists of Western Asia did not, however, confine themselves to the rendering of abstract symbols; quite often they also represented the human form in a fairly naturalistic guise. But even when the human figure was represented, it was very rarely a portrait, and this fact is, I think, partly to be explained from a deep instinctive fear of the unknown consequences of re-creating too faithful a likeness of the individual. It may have been thought dangerous to capture and imprison the human form in some other medium. That partly explains a number of strange phenomena; the recurrence in Asia of iconoclastic movements, the fear of being photographed, the ancient Egyptians' practice of knocking off the beaks of dangerous birds after they had engraved them in their texts. And, side by side with that fear, there was the innate tendency of human thought towards abstraction, and a desire to translate the divinity into geometric form; a tendency neatly summed up by the Greek philosopher who said: *θεός ἀεί γεωμετρεῖ*

Now that we have noticed the tendency of the Asiatic to use abstract symbols, to use the part of an object to represent the whole, and to crystallise that mental outlook in the invention of writing, let us see what happened when the Western Asiatics applied themselves to portraiture.

One of the earliest known representations of the human head from Mesopotamia is a painting on a libation vase of Samarra ware

[1] "Arpachiyah," Fig. 74.
[2] M. von Oppenheim, *Der Tell Halaf*, I, Pl. LXVII, 2.

discovered at Hassuna near Nineveh[1] (Fig. 2)—a very simple stylisation of the human face, with the two eyebrows painted in an uninterrupted sweep over the bridge of the nose, a technical trick which was constantly repeated at much later periods on Mesopotamian figures. I cannot resist comparing that vase with two prehistoric Chinese pots of the Yang Shao age, the earliest known representations of a be-whiskered pig-tailed Chinaman. According to Prof. J. G.

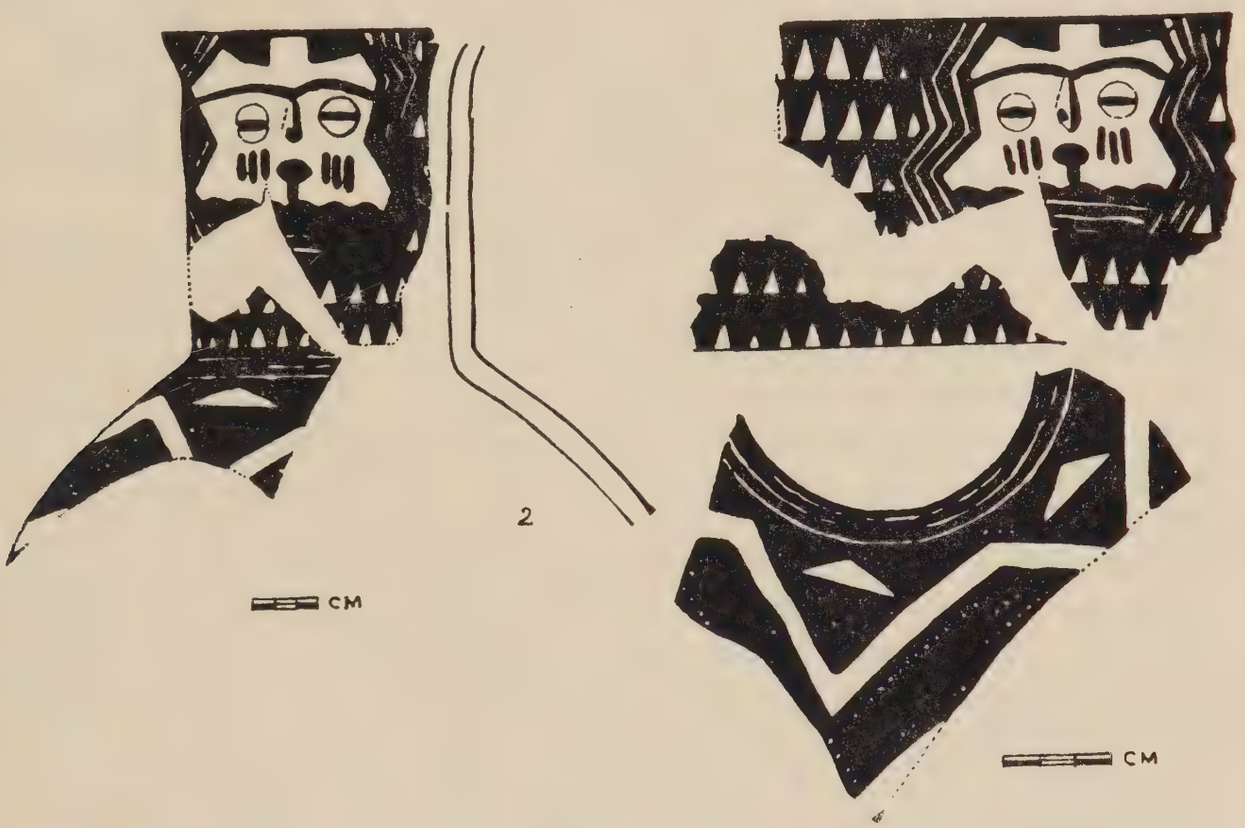


FIG. 2.

Andersson those pots may be at least four thousand years old; at all events this is a remarkable token of continuity in Asiatic fashion.[2]

If we consider the evidence for the continuity of tradition, nothing is more enlightening than a study of the development of sculpture. Take first a limestone head discovered at Brak at the Syrian end of the Tigris-Euphrates valley.[3] It is one of the earliest known carvings of a north Syrian school of sculpture, a bold piece of stylisation with little attempt at portraiture. Then there is a

1 *J.N.E.S.*, iv, 1945, Pl. XVII, 2.
2 *Bulletin* 15, Museum of Far Eastern Antiquities, Stockholm, 1943, Pl. 186.
3 *Iraq*, ix, Pt. 1, Pl. I.

splendid marble head from Warka,[1] (Plate I) at the southern end of that valley, perhaps at most a century or two later than the head from Brak, for it was probably made in about 3000 B.C. This head marks an astonishing advance in naturalism: note the sensitive mouth and the plastic realism of the face. Frankly this is a surprise, because it is far in advance of the formal school of Mesopotamian and Sumerian sculpture which was still in vogue as late as 2500 B.C. But it does show that the sculptors of that time could on occasion translate the human head into stone with the same sensitive appreciation of form which they already had for animals.[2] Alongside those rare representations of the human figure, abstract symbols closely associated with the gods were constantly recurring as for instance, the remarkable series of eye-idols from Brak.[3]

In Western Asia, however, we have to wait till about 2300 B.C. for a rendering of the human head which comes very close to portraiture.[4] The magnificent bronze head from Nineveh (Plate II) was probably made more than a thousand years after the primitive face vase from Hassuna. The original, which is in the Iraq Museum, Baghdad, is to my mind one of the finest bequests from that great legacy of Asia which we are considering. It is a noble representation of the human head, and I have guessed that it may be a portrait of king Sargon, founder of the imperial dynasty of Agade. The exploits of that king who was reputed to have marched up the Tigris-Euphrates valley into Anatolia, across mountain barriers never before penetrated by any Mesopotamian monarch, were still remembered in the Hittite archives of Boghaz-Köi nearly a thousand years after his death. And it is only fitting that this head should still recall the royal style of hair-dressing embodied in the golden helmet of Prince Mes-Kalam Shar, discovered by Sir Leonard Woolley in the Royal Cemetery of Ur.[5]

In Mesopotamia and in Babylonia, sculpture in metal seems to have matured earlier than sculpture in stone, and indeed much of the urban prosperity in the Tigris-Euphrates valley after 3000 B.C. was due to the remarkable metallurgical skill which had been attained

[1] H. Frankfort, *More Sculpture from the Diyala Region*, II (Oriental Institute, Publications LX), p. 2. Fig. 1.

[2] "XI. Vorläufig Bericht über . . . Uruk-Warka" (*Abhandl. d. Akad. der Wissenschaften*, phil. hist. Kl., Berlin), pp. 19 ff, Pls. 1, 21, 32. *Iraq*, ix, Pt. 1. Pls. XLV, XLVI.

[3] *Iraq*, ix, Pt. 1, Pl. LI.

[4] *Iraq*, iii, Pt. 1, Pls. V–VII.

[5] Woolley, *Ur Excavations*, II, *The Royal Cemetery*, frontispiece.

by artisans at that time. And the increased efficiency of their metal and stone tools enabled them also to achieve many triumphs in the working of the harder stones. The remarkable series of statues representing Gudea, *ensi* of Lagash in the twenty-third century B.C., carved in a hard black Persian diorite, is striking evidence of the technical skill and artistry which had been achieved by contemporary sculptors.[1] These again are stylised royal portraits, perhaps deliberately not too closely imitating the features of the living monarch. The identity of the ruler is, however, given us by the beautifully cut cuneiform inscriptions engraved on the statue itself.

After 2000 B.C. monumental sculpture tended to become stereotyped, although much fine work was still being produced under the Third Dynasty of Ur. Let us consider a world famous monument, the stele of Hammurabi which registers the first known complete code of laws.[2] At the top is the Sun-god investing the king with the holy symbols of office. Once again, in spite of the political changes which have now occurred and the establishment of an Amorite dynasty in Babylonia, you can see that the ancient sculptural canon still predominates. And indeed even the famous Babylonian code, as we now know, was not an original production. It appears in fact to have been an emended and amplified form of a Sumerian code which had been promulgated by Lipit-Ishtar, a king of the city of Isin, near Ur, more than a century earlier.[3]

Although there seems to have been a falling off in monumental sculpture in the second millennium B.C. and even architecture towards the end of that period showed a marked decline, yet there are notable exceptions. For instance, there is the splendid bronze statue of Napir Asu,[4] queen of Susa, unfortunately headless, a product of 1500 B.C. or thereabouts. Here is proof that the great tradition of ancient sculpture was by no means dead. We have to admire the sureness and dignity of poise, the delicate scoring of the dress, and the restraint in the display of ornament. But above all one must marvel at the sensitive rendering of the aristocratic hands, even more subtle perhaps than the finely rendered hands on the Gudea statues. The

[1] Ed. de Sarzec, *Découvertes en Chaldée*, ii, Pls. 16–20.

[2] *D.P.M.*, iv, Pl. 3.

[3] F. R. Steele, *A.J.A.*, li, pp. 158 ff. There is little doubt that legal codes had been formally promulgated even earlier. This is now proved by the discovery at Harmal of a code, composed in the Akkadian language and dealing with the law of Eshnunna as promulgated by Bilalama or his son. See Taha Baqir and A. Goetze in *Sumer*, iv, pp. 52 ff.

[4] *D.P.M.*, viii, Pls. XV, XVI.

front of the statue bore an inscription in the Anzanite language recording the names of the queen and of her husband: it invoked curses on anyone who in aftertime might destroy or efface the queen's name. And in fact this statue did escape removal by the Assyrian king Ashur-bani-Pal who, nine centuries later, removed thirty-three statues from the city when he sacked Susa. There was a ton and a half of solid metal in that statue, which was heavy enough to break the primitive tackle used by the French excavators, who all but dropped it into the river Karun when they first attempted to carry it home! You may judge from that, the tremendous quantities of ores which must have been available in Susa in ancient times.

The statue is of great interest technically, because it was cast by the *cire perdue* process and the outer casing after completion was filled up solid with molten metal. In style this statue harks back to the Agade period and is comparable with a stone monument of king Manishtusu, a son of the great Sargon. That again illustrates the long continuity in the tradition of royal sculpture in Western Asia. We are left wondering what the head of the queen looked like. We can hardly doubt that it was a splendid piece, perhaps on a par with the magnificent bronze heads from Azerbaijan, which are believed to date from about the same period.[1]

I have of course deliberately selected a number of masterpieces to illustrate the continuity of art. It is perhaps only fair to admit how debased the rendering of the human form could become when the sculptor was content with a slavish rendering of an outworn tradition. A stone tablet which was discovered at the city of Sippar near Babylon was a deliberate archaism.[2] It is the foundation tablet deposited by the Babylonian king Marduk-apal-iddinam who in about 870 B.C. restored the temple of Shamash after he had discovered and copied the ancient tablet of the god which had been found lying on the banks of the Euphrates. Here the sun-god is sitting under his celestial canopy; the sun disc which is suspended from heaven on a rope rests on the altar, and the king after proper introduction receives the divine ordinances, much as Hammurabi had received his from the sun-god, nine hundred years earlier. But how miserably stunted the human form has become, how lifelessly and unimaginatively the figures are disposed over the surface of the plaque, which is no more than the superstitious record of a magical event. This, however, is an interesting piece for it is evidence of the respect for antiquity which

[1] A. Upham Pope, *A Survey of Persian Art*, Pls. 105–7.
[2] E. A. Wallis Budge, *Babylonian Life and History*, Pl. III.

the priest-kings of that disturbed age still felt, and indeed for at least another five centuries we have a remarkable variety of evidence of a deliberate antiquarian revival of ancient traditions.

The examples of sculpture which I have mentioned, remind us that the Asiatics made very few exact portraits of the human head, and even when we have a feeling that we are very near to the actual appearance of the person represented, there is a certain formal restraint imposed by the ancient sculptural canons. But in a small bronze head, a weight discovered in a jeweller's work-shop at Ugarit on the Mediterranean coast of Syria[1] (Plate II), one may discern a really life-like picture of some snub-nosed tradesman of the fourteenth century B.C., though perhaps it would be fairer to call it a caricature. It is on *genre* pieces of this kind, which have all too rarely survived, that you get a glimpse of the living man. I think that a few of the clay heads of the early dynastic period from the Diyala valley may also have been close reproductions of persons living at that time.[2]

I have chosen sculpture to illustrate the formal continuity of certain traditions in Western Asia. It would be no less impressive to follow the development of mural art and architecture, objects in faience and ivory, writing, religious ritual, funerary customs and a hundred other aspects of archaeology from the dawn of history down to Assyrian times. Everywhere we could find decisive evidence of that strength of tradition which survived from the very beginnings of urban life through dark ages when authority had broken down, to the first century B.C. when the impact of Greece upon Asia had changed the face of the Asiatic world. Yet that influence from Europe brought about a superficial, and not a fundamental, change, as we can see from a close examination of the sculptures of Palmyra, or of contemporary art in Persia. Deep down, the spirit of Asia was unchanged. And I suppose that those of us who have at times lived near to the peoples of the soil in different parts of Asia have felt profoundly conscious of an ingrained approach to life which has its origin far in the immemorial past. Asiatic archaeology strengthens that impression and proclaims aloud that five thousand years of social, political and economic change, have hardly altered the varied facets of the Asiatic character. That may well give food for thought to those who would lightly assume that the occidental way of life can work any speedy change on the spirit of Asia. We need but remember

[1] C. F. A. Schaeffer, *Syria*, xviii, Pl. XXIV.
[2] H. Frankfort, *op. cit.*, Pls. 43–4.

the words of the Psalmist: "For a thousand years in thy sight are but as yesterday when it is past, and as a watch in the night."

While we have been observing the continuity of traditions in Western Asia, we have also pointed to similarity of fashions in widely separated tracts of the Asiatic world. A glance at the map will reveal the vastness of that territory. And here I should say that, if you asked me to define the frontiers of Western Asia, I would be unable to do so, in spite of the fact that within them lies the subject which I am expected to profess. I suppose that the core of that territory runs from Troy at the Western end of the Anatolian peninsula to the eastern end of Persia, and from the Caspian sea down to the bottom of the Sinai desert and the Persian gulf. But from all those extremes there are archaeological bridges which carry you into Europe and Russia on the one hand, and down to Egypt and up to the Indus valley on the other; and it is perhaps just the crossing of those bridges which may lead us to make the most interesting discoveries in the course of the next few years.

What was it that led to so many similar developments in the arts and crafts in this vast area, and why is it that this field of archaeology leads to the conviction that invention proceeded at a fairly uniform pace throughout the then civilised world? Why is it that Hittite monuments and Anatolian seals so often reflect the formal symbolism of Mesopotamia and of Babylonia? Why is it that if you have a knowledge of Mesopotamian archaeology, you can with comparatively little difficulty follow the sequence of ancient Egyptian handiwork? Many answers might be given to these questions, and we must allow much for what appears in retrospect, but only in retrospect, to be a predestined sequence of like causes from like effects. Of course the influence of Asiatic mountains and of deserts, of life along open river valleys with its inevitable sequence of natural or of artificial irrigation, must produce certain well defined patterns of society. But how vastly different was the course of ancient civilisation in the Americas, where comparable conditions can be found!

The environmental background is not enough to explain a certain fundamental unity in Asiatic civilisation. It was rather the search for raw materials and the exchange of finished products along natural lines of communication which linked together the most distant parts of Western Asia. Along the trade routes men carried not only commodities, but ideas, and as man is essentially an imitative creature, changes in fashions and techniques were rarely without influence on centres far from the ultimate source of origin. Some-

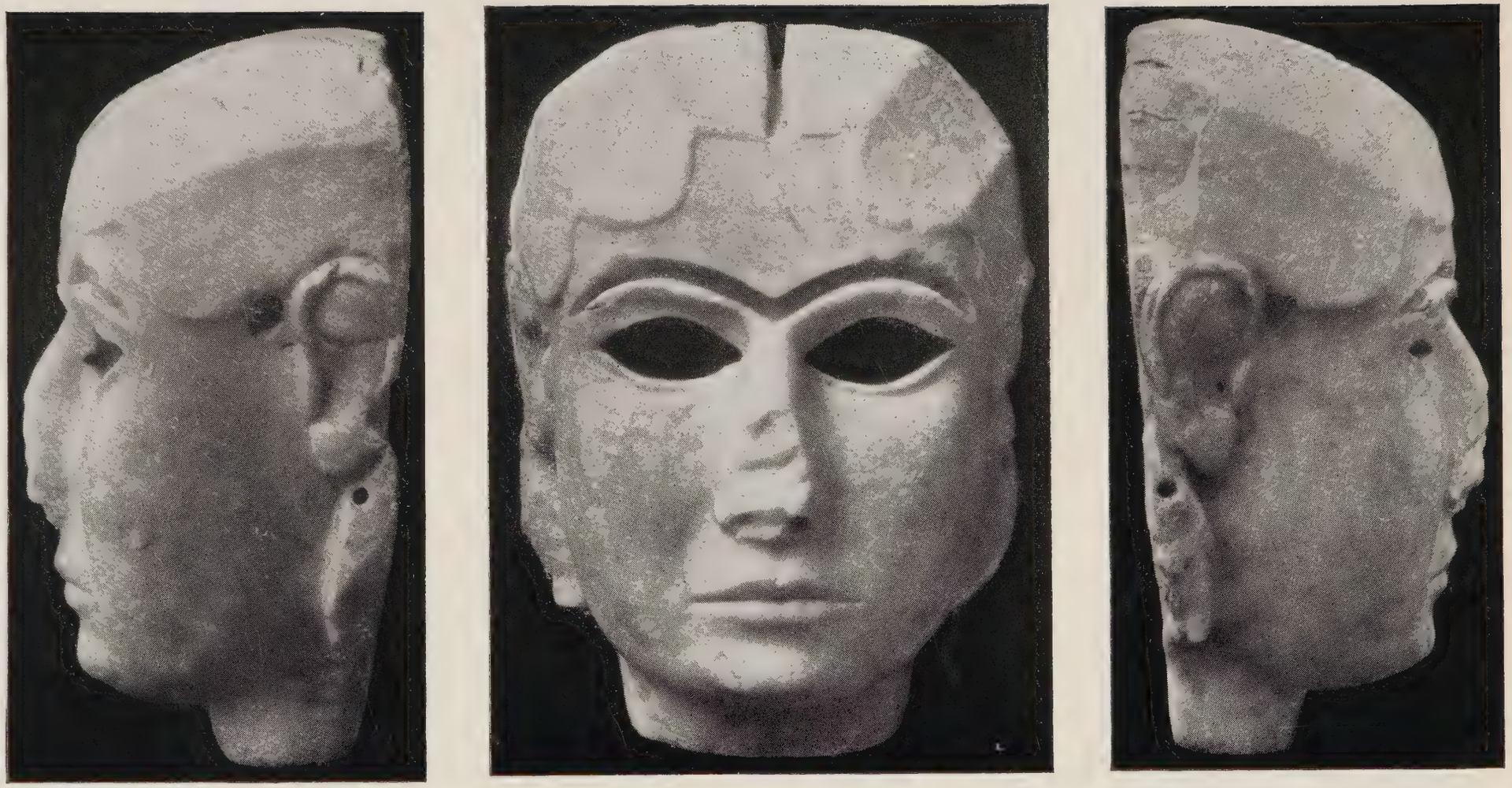


PLATE I

MARBLE HEAD FROM URUK, JAMDAT NASR PERIOD (c. 3000 B.C.)

By courtesy of H.E. Naji al Asil, Director General, Iraq Antiquities Department

facing page 32

(I) LIFE-SIZE BRONZE HEAD OF SARGON (?) OF AGADE, FROM NINEVEH (c. 2350 B.C.)

By courtesy of H.E. Naji al Asil, Director General, Iraq Antiquities Department.

(II) BRONZE HEAD (MINIATURE WEIGHT) FROM UGARIT (c. 1350 B.C.)

times, it is true, certain revolutionary inventions took a surprisingly long time to spread. For example, pottery was probably made on the wheel in Mesopotamia at least five centuries before this technique penetrated to Anatolia; but new ideas perhaps travel more quickly in the plains than in the mountains, and the great Anatolian mountain barriers resisted and retarded their impact.

It was, however, the quest for metals which ultimately broke down even the most formidable natural defences, and in this respect Anatolia with its wealth of alluvial gold, its copper ores, its silver and lead, was one of the vital sources of supply. And from the middle of the second millennium B.C., iron has to be added to that list. The distribution of the special products of the metal-worker gives us a glimpse of the mechanism by which the most distant parts of Western Asia were kept in touch with one another. Certain highly specialised forms of jewellery for instance were very probably produced and diffused by small groups of workers who jealously guarded their trade secrets, and no doubt toiled in far distant cities. I think that they sometimes fashioned talismans which, one might almost say acted as magical links between those cities. That such trade secrets were most jealously guarded we know from written evidence. Mr. C. J. Gadd and the late Dr. R. Campbell Thompson some years ago published a cuneiform text written in the reign of king Gulkishar, about the seventeenth century B.C., containing secret recipes for the preparation of certain glazes. That tablet was written in a series of cryptograms which would have defeated any ordinary scribe, but did not altogether defeat these two scholars of our own time. Indeed the decipherment of that particular text is one of the triumphs of modern epigraphy.[1]

An interesting present-day parallel to the ancient diffusion of specialised forms of craftsmanship comes readily to my mind. I refer to the Subba, otherwise known as Mandaeans who work in small pockets in various cities of Iraq, Syria and Arabia. This very interesting community has been fully described in a standard work by Lady Drower.[2] They are well known to any troops who have served in the Near East for their production of silver niello work. The design is first scratched on to vases, boxes, or trinkets, then filled with antimony and fired. But they keep the process strictly secret. They have a religion of their own, which is neither Christian nor Islamic, and some of their rites and practices even strangely recall

[1] *Iraq*, iii, Pt. 1, pp. 87 ff.
[2] E. S. Drower, *The Mandaeans of Iraq and Iran*, Oxford, 1937.

those of the *baru* and *ashipu* priests of Babylon, as Lady Drower has pointed out.[1]

The study of communities of this kind is closely relevant for an understanding of the practice of ancient Asiatic craftsmanship. It is not unlikely that ancient artisans were similarly bound together by esoteric rites which were closely related to the practice of their craft. I remember meeting and recognising a solitary Mandaean in Libya during the war, and asking him how he managed to ply his trade in a city which had no running water; for, as is well known, the Mandaean needs running water for the practice of his religion. He begged me with the utmost insistence, not to divulge the fact that he was of a different religious persuasion from the alien Libyans amongst whom he was plying his trade.

There is one other point to which I wish to draw attention while we are discussing the Mandaeans. The designs and shapes of their vessels and jewellery were very different fifty years ago, when they were working under the Ottoman Empire. As soon as our troops entered Iraq and Syria, they altered both the forms of their vessels and the patterns of their engravings to meet the demands of a new market. That fact should in itself make us very cautious in assuming that any radical alteration in the forms of ancient pottery, metal, stone or such like products were in antiquity necessarily due to any *basic* change in the population. Change and development in craftsmanship must very frequently have been inspired from the top rather than from the bottom stratum of the population. A parallel case in antiquity was the white-painted pottery commonly known as Nuzu ware, which has turned up on Palace sites both in the Tigris and Orontes valleys and seems to have been made to suit the new tastes of Mitannian rulers.[2]

It would be easy to go on enumerating examples of specialised craftsmanship which had a wide influence throughout Western Asia. We depend of course very largely on the evidence of such commodities for fixing our ancient chronology. For example, the Babylonian cylinders and fluted silver vessels discovered in a single deposit at Tud near Luxor,[3] are a most important link between the twelfth dynasty of Egypt and the beginning of the first dynasty of Babylon. For these deposits were associated with the name of Amenemhet II

[1] E. S. Drower, *op. cit.*, Introduction, pp. xviii ff and xxiii, n. 3.

[2] *Iraq*, ix, Pt. 1, Pls. LXXVI–LXXVIII.

[3] J. Vandier in *Syria*, xviii, pp. 174 ff. The deposits from Tud are a mixed lot. The cylinders probably range from the Agade period to the First Dynasty of Babylon.

who cannot therefore be very far removed in time from Sumuabum of Babylon. This discovery also confirms the evidence now available from Babylonia and Syria that certain forms of silver vessels and weapons which had begun at the end of the Early Dynastic period in the Tigris-Euphrates valley, were still current shortly after 2000 B.C.

It would be no less enlightening to touch on the subject of iron and show you what an important part the iron-worker played in the diffusion of finished objects throughout Western Asia. We now have incontrovertible evidence that iron was used in the manufacture of Mesopotamian weapons in the Khabur and Diyala valleys before the twenty-seventh century B.C. The source of that iron was very possibly Armenia.[1] It is surely more than a coincidence that most of the iron-working in Syria to-day is still in the hands of the Armenians, and that one of the common Armenian family names is "son of the iron worker." By the middle of the second millennium B.C., iron, no less than gold, lapis lazuli, horses and women was the subject of diplomatic correspondence in the royal archives of the Egyptian, Hittite, Mitannian and Babylonian kings. A magnificent iron-bladed axe discovered at Ras Shamra is a product of that period and is comparable in technique with ceremonial objects from Egypt.[2]

Let us also consider lapis lazuli—that lovely blue stone, endowed with magical properties and known in Akkadian as *Uknu*. As far as we know the source of that stone was the mines of Badakhshan on the northern confines of Afghanistan, the ancient Bactria. An interesting account of these mines has been left us by John Wood who in the course of a journey to the headwaters of the river Oxus, visited them just over a century ago.[3] The mining of lapis lazuli by fire, hammer and crowbar is a difficult and dangerous operation and takes place in galleries deep under the mountain side. Wood noted that the lapis was graded by the miners into three varieties according to colour, which reminds us of three grades of bright lapis, mentioned in the ancient Assyrian texts.[4] The stone first appears in the shape of beads as early as the Badarian period in Egypt, and tremendous quantities of cylinder seals and beads were manufactured from it in Early Dynastic Mesopotamia. It would be extremely interesting to follow the vagaries of the lapis trade in

[1] *Iraq*, iii, Pt. 1, pp. 26–7.
[2] C. F. A. Schaeffer, *Schweich Lectures*, 1936, Pl. VI, Fig. 2.
[3] John Wood, *A Journey to the Source of the Oxus*, 1841.
[4] R. Campbell Thompson, *Assyrian Chemistry and Geology*, pp. 129 ff.

ancient times, for the quantity available at any given period depended on the practicability of using the trade-routes to central Asia; and that of course requires an analysis of changing political conditions. We must content ourselves with saying that lapis lazuli continued to be prized for millennium after millennium. For example, we may recall a necklace consisting of 110 lapis lazuli beads and gold pendants discovered by Montet on the mummy of the Pharaoh Psousennes, the last king of the twenty-first dynasty of Egypt, who was reigning in about 980 B.C. A plaque found together with that necklace bore a hieroglyphic inscription which runs as follows: "The king of the South and of the North, Akheper-Rē-Sotopenamun, the son of the Sun, beloved of Psebkhanout; he has fashioned a great necklace of true lapis lazuli, the like of which has never been made by any king."[1]

But even more interesting is the little lapis lazuli disc which also went with the necklace. It is inscribed in Assyrian cuneiform writing, which E. Dhorme assigns to between the thirteenth and the eleventh centuries B.C. The Assyrian inscription records that a certain Niq-Shamu made the stone for Nabaltu, his eldest daughter, in honour of the gods Ashur, Bel and Nin-lil who were gods of a city called Shupi-Bel which is mentioned in a slightly different form on inscriptions of the Assyrian kings, Esarhaddon and Ashurbanipal, and is known to have been situated on the frontier between Elam and Babylonia. The last line of the inscription was for the sake of economy of space composed not in syllabic form, but entirely in ideograms. This last line enjoined the princess for whom the stone was made, not to remove the beautiful lapis lazuli from her person and never to utter the name of the god and the king of her native land. In other words this amulet, her inalienable property, was the symbol of the indissoluble and sacred bond which still bound her to her distant kinsmen. There you have a legacy of a foreign princess who had been admitted to the Pharaoh's *harem* by one of Psousennes's predecessors. It gives us a glimpse of the strange vicissitudes of fortune by which the original stone travelled from the far distant lapis lazuli mines, was worked into a bead in Babylonia, there inscribed with a magical formula and came to rest in the grave of an Egyptian Pharaoh.

Discussion of the source of lapis lazuli, the province of Badakhshan, also reminds us that only a few hundred miles further north, the province of Ferghana was in the second century B.C. to become a link between the Far East and the Far West. For here a Chinese emperor sent two daring and costly expeditions to obtain what the

[1] *Monuments Piot*, Vol. XLI, 1946, pp. 1–28.

Chinese described as the supernatural western breed of horse. It is therefore not surprising that certain clay models of Chinese horses conform very closely with the famous Pentelic horse of the fifth century B.C. from the Parthenon.[1] It is also interesting that the type agrees very closely with Xenophon's description of the good war horse: bony head, small cheek, prominent eye, wide nostril, small ears. Very much older is a small stone amulet which I picked up in the Khabur valley of northern Syria—an equine modelled in about 3000 B.C., and even then regarded as a supernatural beast as we know from other pictures of that epoch.[2]

It is perhaps fitting that I should conclude my brief survey of a small part of the Legacy of Asia, in that no man's land where the Chinese met the descendants of the Macedonian Greeks and began to contemplate the miraculous inventions of a new way of thought. And if I were to speculate on the future path of Western Asiatic archaeology, I would forecast that in that direction lies the hope of many great and fascinating discoveries. And I venture to predict that a time will come, perhaps not in our generation, when from prehistoric times onwards, we will be able to link by a series of stepping-stones a continuous trail in the civilisations of the Far East and the Far West. That can only be done by excavation and the archaeological method.

Within Western Asia itself we are still faced with a variety of intriguing problems. Not the least of them, which is at present exercising our minds, is chronology: the effort to link up the historical overlaps between Mesopotamia and Egypt for example, and to cross the many bridges which connect Asia with Europe. Much has been achieved, and the legacy which one hundred years of continuous excavation abroad and patient scholarship at home have handed down to us is at once a marvellous gift and a great trust. We have to see to it that the fruits of previous generations of labour are maintained and enriched by our own endeavours. And I would remind you that we have in this country not only a proud record of scholarship to maintain, but also in our Museums rich store-houses of treasure which can be a source of perpetual wonderment and joy to the initiated and to the uninitiated alike. And it may also be fitting to remind ourselves in these times of austerity, when we seem to be increasingly preoccupied with the effort to obtain the bare necessities of life, that it is more than ever our duty and our privilege

[1] *Eurasia Septentrionalis Antiqua*, ix, pp. 248 ff.
[2] *Iraq*, iii, Pt. 1, Pl. I, No. 10.

to reflect deeply upon these ancient legacies, and to remain aware that the pursuit of knowledge is in itself one of the real values.

Archaeology as I see it is the picture book of history. And the material of archaeology is everything that lies buried within the past. The field is limitless and we have of course to define our frontiers. In this University that has been done in a practical way by laying down more than one syllabus for various domains of Western Asia. And in conclusion I would like to take this opportunity of paying a tribute to Dr. Sidney Smith who rendered such signal service to this University during his voluntary tenure of office as Professor of Near Eastern Archaeology. Dr. Smith prescribed the syllabus in a form which includes the study of history, religion, language and archaeology. He alone perhaps was fully competent to teach those subjects single-handed, and I am profoundly conscious not only of the honour which has been conferred upon me, on being appointed to the Chair of Western Asiatic Archaeology, but also of the fact that I must depend on the co-operation of my friends and colleagues in London for the competent teaching of that vast subject. Twenty years ago when I first began to excavate there were at times no less than fourteen expeditions digging between Tigris and Euphrates, and it was then perhaps permissible to concentrate on pure archaeology alone. It may be many generations before that can happen again. Some excavation we hope, will always be possible in Asia, but for a generation or more the number of expeditions taking the field must be few and far between. Now the time, and indeed the opportunity, has come, for the archaeologist to obtain at least an intelligent appreciation of some of the Asiatic languages which have a vital bearing on his studies. It is no less the duty of the technical linguist to broaden his vision by examining archaeological problems.

And let us never forget that archaeology is not a study of dead matter: it is the attempt to follow the unbroken line of human endeavour. Archaeology shows us the results of rest and toil, of exhaustion and achievement; through it we contemplate the perpetual renewing of life. What the past can give us is a proper philosophy for the present. To archaeology I would like to refer a saying of the late E. G. Browne on the subject of Asiatic medicine. "There has grown in me," he said, "while communing with the minds of these old Arabian and Persian physicians, a realisation of the solidarity of the human intelligence beyond all limitations of race, space or time."[1]

[1] *Arabian Medicine*, Cambridge, 1921, p. 126.

Humanly-struck Flakes from Gravels in Hertfordshire

By I. W. Cornwall

Many humanly-fashioned flakes of Lower Palaeolithic types have been recovered from fluviatile deposits. The gravel-spreads at higher levels have hitherto been much neglected by archaeologists, for they have only rarely yielded artifacts—and these often atypical and hardly to be assigned to any recognised human industry. The writer's attention was drawn to a particular exposure of a deposit of this kind by the discovery, in the collection of Mr. George Demaine, of Bushey Heath, Herts, of a few well-defined man-made flakes from the "Black Boy" gravel pit, next to the inn of that name, on the main road half-way between Watford and St. Albans (O.S. 1″ map, 6th ed., Sheet 160. Nat. Grid ref. 121024). The site also appears in the S.W. corner of the 1″ Geological Survey map (Drift edition), Sheet 239, where it lies on the western border of an outlier of boulder clay, centred on Bricket Wood, overlying "glacial gravel with Bunter pebbles."

The sections exposed in the pit give a sequence of the Drift deposits from their bench on the Upper Chalk, which here forms the underlying "solid," to the boulder-clay capping the hill, into the side of which the pit is cut. A series of ochreous gravels and sands, about 30 feet thick and with loamy horizons, lies on the chalk. It is with the upper part of this and the overlying clays that we are chiefly concerned, for it is here, at a depth of between 10 and 16 feet *below* the base of the boulder-clay, that the flakes were found.

Above the sand and gravel comes a clay bed, which, when the section is clean, appears to consist of three distinct subdivisions: below, a chocolate-brown clay; intermediately, a grey-buff laminated clay with calcareous concretions, and, above, another bed of a yellow-brown colour.

Over this again once lay the boulder-clay, but at the head of the pit this has been worked back in a wide "step" to a distance of some 100 yards from the edge of the face.

Now the gravels in the section, though consisting chiefly of flint, contain numerous erratics. The most plentiful and characteristic of these are well-rounded quartzite pebbles, which are recognised by geologists as being derived from the Bunter formation of the Triassic period, which is widely exposed in the West Midlands. Other foreign stones are vein-quartz, felsites and granites, which are even further-travelled. Clearly, then, the gravels contain material brought to the area by ice during a glacial advance and deposited, washed clean from the finer materials, either by the meltwaters of the ice-sheet or, at a later stage, by an interglacial river.

The lowest member of the tripartite clay bed, with a negligible content of calcium carbonate and dark brown colour, suggests material from an ancient land surface, re-deposited as a laminated sediment in a standing pool of meltwater. The brown colour suggests oxidation of the iron salts, due to weathering. The presence of some humus, revealed by chemical tests, tends to confirm this conclusion. Physically it much resembles the bed which follows. The suggestion that weathered material is incorporated in this lower clay does not imply that it was weathered *in situ*, but rather that weathered material, derived from land-surfaces in the neighbourhood, was incorporated. The transporting agent may have been wind, since a small amount of well-rounded quartz-grains with polished surfaces is found in the clay.

The grey-buff laminated clay, by contrast, has evidently never for long been exposed to weathering agencies, though both it and the bed above are somewhat folded and warped, probably by the weight and pressure of the ice which later deposited the boulder-clay. Its high content of lime, the grey (not markedly yellow or brown) colour and almost entire absence of humus show this. The laminated structure is reminiscent of the varved clays of Scandinavia, and suggests that it may have been formed in the same way. Such laminated clays have been recognised near Ware.[1] The grey clay also contains what appears to be wind-blown sand, and in quantities rather larger than those found in the underlying brown clay. From this composition, compared with that of the latter, it would appear that, after surface soils had been removed by wind and in part incorporated in the lower brown clay, wind activity increased and worked on surfaces exposing fresh, calcareous, material.

The uppermost member of the trio appears originally to have had

[1] Sherlock, Pocock and others: *Geology of the Country Round Hertford, Mem. Geol. Survey*, 1924, p. 47.

the same structure as the grey-buff clay, but is now almost entirely decalcified and much browner in hue. It contained only very few quartz grains. As these do not disappear readily as the result of weathering in temperate climates, it may be inferred that wind activity had died down by the time when the upper brown clay was being deposited.

Over all was the boulder-clay. This shows that, during the latest glacial episode to have left deposits in the area, the ice actually advanced across the site. Since the boulder-clay is decalcified through to its base, it seems probable that this weathering has extended as far as the upper (brown) part of the laminated clay beneath it.

This succession may be interpreted in two alternative ways. The first, and simpler, is to assume that the gravels were deposited by meltwater from an advancing ice-sheet. As the ice approached the site the water was dammed up by an unknown obstruction and laminated clays were formed. Finally the ice passed over the site, disturbing the laminated clay. But, in order to uphold this interpretation, it is necessary either to neglect the evidence for weathered material contained in the lower brown clay, or to say that humic soils survived the meltwater phase and were denuded only when the ice had almost reached the locality.

The alternative is to assume that the gravel dates from a mild phase and contains erratics derived from some earlier glacial deposit, that the evidence for weathering in the lower brown clay indicates the end of this mild phase and that a second advance finally brought ice to the site. It is impossible to decide which of the two alternatives is to be preferred, but the second alternative is not to be refuted on grounds of improbability. There is other evidence in Hertfordshire —admittedly inconclusive too—suggesting that two distinct advances of the ice affected this county. In several exposures north of Hatfield and between Hatfield and Hertford two boulder-clays, one above the other, with intervening gravels and sands, have been recognised.[1] If this means that there was an oscillation between two advances of the ice, the makers of the flakes from the upper part of the thick gravels at the Black Boy Pit may have been living during this milder interval.

Wooldridge,[2] studying this region, recognised three distinct spreads of gravels, attributed to systems of drainage different from that of the present Thames and its tributaries. These he named the

[1] Sherlock and others, *op. cit.*, p. 44.

[2] Wooldridge: "Glaciation of the London Basin . . ." *Q. J. Geol. Soc.*, 94, 1938, 627.

Higher and Leavesden Gravel Trains, the Lower Gravel Train and the Winter Hill terrace (of which the correlative in the Watford area is the Eastern Outwash gravel, apparently originating in the two most advanced lobes of the ice, at Aldenham and Finchley respectively). According to Wooldridge, these gravel-trains all represent higher and older drainage-channels of the Thames, preceding the Boyn Hill stage. The first two do not here concern us. The surface level of the Leavesden Gravel Train in this area is considerably above 300 ft. O.D., and the Lower Gravel Train is not represented at all.

Wooldridge attributed the gravels at Bricket Wood and elsewhere, lying between 200 and 250 ft. O.D., to his Eastern Outwash stage, deposited during the advance of the ice which reached its maximum extension in the Aldenham Lobe, now represented by the westernmost outliers of boulder-clay, of which the Bricket Wood outlier is one.

The artifacts, and the gravel containing them, must antedate this latest ice-advance in the region. By how much they antedate it cannot yet be said, but there is the suspicion that at least a part of them may be, not glacial outwash, but a true fluviatile gravel, the product of a stream reworking the materials left in the district by a still earlier ice advance—that which formed the lower sheet of boulder-clay near Hatfield.

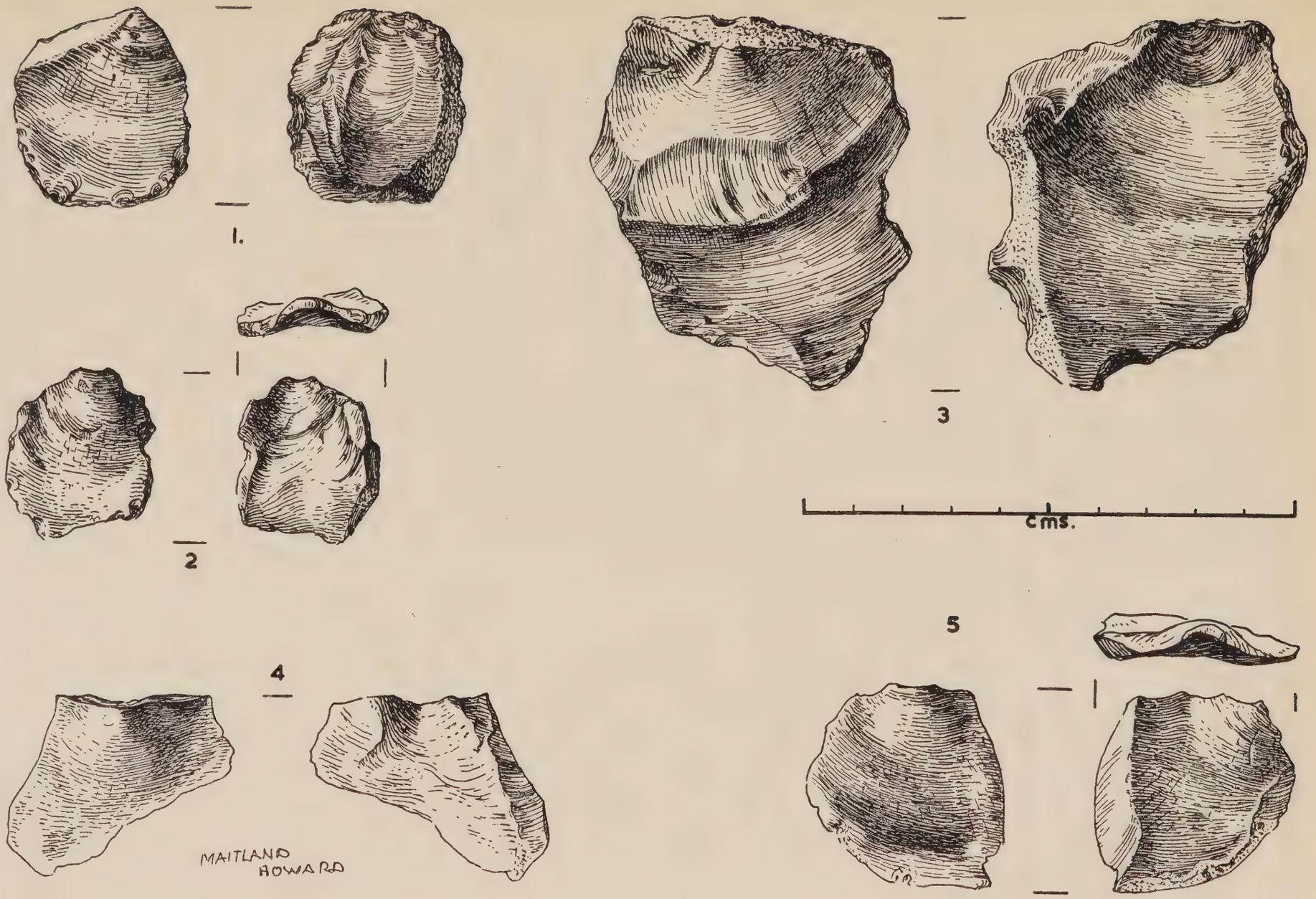
No faunal remains which might assist to decide this question have yet come to light from the Black Boy Pit, but (probably derived) isolated teeth of hippopotamus and horse, found in gravel-pits near Hertford and Ware,[1] show that the existence of interglacial deposits, and possibly fossiliferous gravels, in the region cannot be excluded.

The geological evidence for the age of the artifacts, therefore, is not conclusive, though a minimum age may be assigned to them. Being covered by a boulder-clay which is at least as old as the Penultimate (= Riss) Glaciation, and possibly older, the artifacts in the gravel must antedate this period.

The Artifacts from the Black Boy Pit

Fig. 1.—A small flake of lustrous yellow flint, 10 mm. in maximum thickness. The flake-face has the cone and radiating "stun-marks" characteristic of stone percussion, the platform consisting of a probably naturally-fractured surface of the original nodule and making an angle of about 110° with the flake-surface. The other face

[1] Sherlock and others, *op. cit.*, p. 33.



1. A stone-struck flake, possibly waste from the manufacture of a hand-axe during the roughing-out process.
2. A thin flake, apparently struck by the wood-baton technique. Waste from wood-retouch of a hand-axe?
3. A flake exhibiting Clactonian technique, the second of two struck from the same platform.
(1, 2 and 3 from gravels at the Black Boy Pit, Herts.)
4 and 5. "Wood" flakes struck by M. Coutier during manufacture of a hand-axe, for comparison with No. 2.

shows a number of scars of small thin flakes, all struck from the same direction as the flake itself—perhaps due to preliminary removal of the cortex by a series of sharp taps, before striking the first real blow on the core.

It seems possible that the core in question was intended, not merely as a source of flakes, but constituted the real implement aimed at—a hand-axe in fact. This flake could be one of those detached in edge-flaking a core-implement of the Abbevillian or Acheulean type.

The edges and ridges are battered and dulled and the whole surface lustred by sand. Striation, as in ice-transport, is absent.

Fig 2.—This is another small flake, much thinner in proportion than the former. It is the second of two flakes detached by blows at closely adjacent points on the core, both struck in the same direction. The actual platform and points of impact are apparently obscured on both faces by subsequent battering by natural agencies. That on the negative scar is the clearer, but the bulbs, though deeply-bitten enough to give the flake the well-known *chapeau-de-gendarme* or "gull-wing" profile, when viewed from the platform end, are very diffuse, suggesting the use of the wood bâton technique.

This, too, could be a waste flake from the manufacture of a hand-axe. The material, condition and lustre are entirely comparable with these features in the flake described above.

Nos. 1 and 2 were found some years since *in situ* in the upper part of the gravels at the Black Boy Pit by Mr. David Demaine, son of Mr. George Demaine, in whose collection they were seen.

For comparison with these are figured two flakes of grey chert (Nos. 4 and 5) struck from a core implement in the course of manufacture by M. Coutier, during a recent demonstration before the Prehistoric Society at the Institute of Archaeology. These examples were struck off with a heavy boxwood bâton. They bear a quite startling resemblance to the ancient artifact No. 2 (above), having the same diffuse positive and negative bulbs of percussion and the same "gull-wing" cross-section as seen from the platform end.

Fig. 3.—A heavy, thick flake of the same yellow flint as Nos. 1 and 2. The flake-face shows a prominent cone of percussion with radiating stun-marks. The platform consists of an area with thin cortex, making an angle of about 120° with the flake-face. About 20 mm. below the point of impact the flake-surface bears a curious long-oval *éraillure*, running across the line of the main flake-fracture. The other surface consists of a single large negative scar with a

well-marked negative cone at its point of origin, which is only 13 mm. distant from the positive apex, across the platform. The flake was clearly struck from a core which had yielded another like it by a preceding blow struck on the same platform.

As in the other two ancient specimens, the edges and all prominences are broken and battered. The smooth surfaces, likewise, when viewed under a hand-lens, are seen to be closely covered by incipient cones—marks of blows sustained which were not heavy enough to cause a complete fracture. These must have been received during transport by the specimen striking against other transported material. These cones were absent in Nos. 1 and 2, probably owing to their lesser mass and inertia under these conditions.

Close scrutiny with the same lens revealed only a few short scratches of haphazard orientation, so that it appears that the damage was caused not by moving ice, which would have caused deep striae, but by a torrent of water. The lustred surface, caused by the friction of water-borne sand-grains, is further evidence to the same effect.

The piece demonstrates the classical Clactonian flaking technique and its human origin cannot be doubted.

Unfortunately, though it is the most characteristic of the finds (and the only one made by the writer personally), this flake was not found *in situ*, but lying on the talus some 8 ft. below the summit of the gravels.[1] Evidently, however, it could hardly have reached that position save by weathering out of the gravel-face above, for it is not a striking object like a hand-axe, which could possibly have been introduced from another site. Within a few feet, therefore, its provenance may be relied upon.

[1] Another flake of Clactonian type came to light under similar circumstances while this article was in the press.

The Culture Sequence in the Northern Stone Age

Revised after Twelve Years' Research

DENMARK was the cradle of scientific pre-history, and with Southern Sweden is the richest and best explored region in pre-literate Europe. The culture sequences there established have almost provided a standard for the arrangement of the more fragmentary archaeological record in other regions of northern and western Europe, which were, in fact, often in relation with the West Baltic lands. During the war years Danish and Swedish colleagues have had the opportunity of making and publishing startling discoveries that have complicated and modified in a rather disconcerting way the culture sequence. This still, of course, retains its value as a standard so that an adequate account of its new form is a necessity for English students.

In 1936 Dr. Clark[1] could present in his classic book a delightfully clear picture of the course of mesolithic settlement. (1) In the Pre-Boreal climatic phase the first bands of hunters, equipped with the Lyngby–Ahrensberg culture, began to encamp, at least in summer, on the bleak tundras clothing the moraines of the recently melted glaciers. (2) Then in the Boreal phase, when the Baltic depression was occupied by the Ancylus lake, hunter-fishers, who camped in summer beside the meres that interrupted the continuous pine forests, created the well-known Maglemose culture with its several local facies. (3) Finally, in the Atlantic phase, after the Litorina transgression had flooded the Baltic with warm salt water, those hunter-fishers, who took advantage of the new food supplies offered by oyster banks and marine fish, established the permanent settlements along the shores of the Litorina Sea, represented by the Ertebølle kitchen middens. The sequel had been described with equal clarity by Dr. C. A. Nordmann[2] in his Rhind Lectures. In late Atlantic

[1] *The Mesolithic Settlement of Northern Europe*, Cambridge.

[2] "The Megalithic Cultures of Northern Europe," in *S.M.Y.A.*, XXXIX, Helsinki, 1934.

times, when the sea was already receding from the Litorina strand, farmers began to erect Dolmens and furnish them with collared flasks, funnel-necked beakers and amphorae, thin-butted flint axes (some of which imitated metal models) and polygonal battle axes. Then, in early sub-Boreal times, the Passage Grave replaced the Dolmen, and the grave goods underwent changes. The Passage Grave period was divided into three or four phases, chiefly by changes in ceramic style, but the arrival of the Separate Grave folk, about the middle of the period, brought to an untimely end the Passage Grave culture of Jutland, although on the islands it lasted a long time. In the end, however, Long Stone Cists of one kind or another replaced Passage Graves, and daggers replaced axes as the favourite weapon.

The climatic phases, of course, still provide the chronological frame. The Stone Age, too, is still divisible into six main periods, but their relations to the climatic phases and to changes in land and sea levels have been upset, and their contents substantially enriched. These crucial changes had, indeed, been foreshadowed before 1939. In 1937 Mathiassen[1] published his account of the Gudenaa culture of Jutland, an inland culture contemporary with Ertebølle but overlapping at either end with the Maglemosean of Zealand and the Neolithic of the coasts. In the next year Brøndsted, in the first volume of his magnificent *Danmarks Oldtid*, described, and attributed to a pre-Dolmen period, a shaft grave adapted for a contracted skeleton and containing a cord-ornamented beaker from Virrings, in Jutland, while Florin[2] published house-foundations from Östra Vrå, in Södermanland, south-east Sweden. Both assemblages threatened a revival in a new form of Montelius' Neolithic I, the allegedly pre-Dolmen phase characterised by pointed-butted flint axes, that Nordmann had finally buried. But it was geological and palaeo-botanical studies, published in rather obscure notes by Iversen and Troels-Smith,[3] in 1937, that really upset the neat symmetry of the current chronological scheme and initiated the researches with which we are here more particularly concerned. These investigators brought evidence that convinced their Danish colleagues that instead of one Litorina transgression at the beginning of Atlantic times, there had actually been four, the latest

[1] *Aarb.*, 1937.

[2] "Vrå kulturen," in *Kulturhistoriska Studier tillägnade Nils Åberg*, Stockholm, 1938.

[3] *Acta Arch.*, viii, 1937, pp. 278–95; cf. "Pollenanalytisk Datering af Brabrand Fundet," *D.G.U.*, R. IV, vol. ii, No. 16, 1937.

falling within the sub-Boreal. In point of fact, Otto Rydbeck of Lund, as early as 1928,[1] had produced evidence for a multiple transgression, and by 1936 his countryman, Thomassen,[2] had distinguished four. But hitherto these observations had not been allowed to disturb the neat symmetry of the series in Denmark. At the same time, Troels-Smith showed that some Ertebølle kitchen middens (including part of the celebrated "Brabrand find") fell in the sub-Boreal phase and were in fact contemporary with the Passage Grave settlement of Trøldebjerg, on Langeland, and therefore already within the Second Neolithic period. Finally, Westerby[3] had reported the discovery of pottery associated with Maglemosean relics in an apparently Boreal context on Aamose, in Zealand.

As a result of these disconcerting observations the Danish National Museum undertook extensive excavations on Aamose, in Zealand, following upon a re-examination of the familiar Kitchen Midden culture at the sites of Dyrholmen and Kolind, in Jutland. In each case archaeologists worked in close collaboration with geologists, botanists and zoologists, while the same collaboration at other sites has further enriched the picture of human life in the mesolithic and later periods. Throughout, Jessen's[4] new peat zonation has been followed. In this Zones I–III correspond to the pre-Boreal of Blytt and Sernander (II is equivalent to the Alleröd oscillation), IV–VI to the Boreal, VII to the Atlantic, and VIII to the sub-Boreal. But the frontier between Zones VII (VIIb) and VIII is no longer taken as the point "where the curve for Mixed Oak Forests bends inwards, often because the frequency of the linden (lime) especially drops quickly." For Iversen[5] showed in 1940 that this phenomenon may be due to forest clearance by Man, not necessarily at the same time everywhere. Instead a rather small increase in the proportion of ash in the forests and a corresponding drop in the frequency of elm and ivy pollen (mistletoe being unaffected) seems really due to a change to a drier climatic regime, and so could conveniently mark the transition from the Atlantic to the sub-Boreal phase. Pollen analyses, combined with geological and archaeological

1 "Stenåldershavets Nivåförändringar," *Arsber.*, Lund, 1927–28.

2 *Göteborgs och Bohuslans Fornm. Tidskr.*, 1936, pp. 35–56.

3 *Acta Arch.*, viiii, 1937, pp. 296–300.

4 "Archaeological Dating in the History of North Jutland's Vegetation," *Acta Arch.*, v, 1935; "The Composition of the Forests in Northern Europe in Epipalaeolithic Times," Det. k. Dansk. Videnskab, Selskabs *Biolog. Meded.*, xii, No. 1.

5 "Landnam i Danmarks Stenalder," *D.G.U.*, R. II, No. 66, 1941.

observations at several sites,[1] agree in indicating that the first transgression coincides with the bottom of Zone VII, the second falls about its middle (transition from VIIa to VIIb), the third near its close, while the last is early sub-Boreal.

The investigations at Aamose have largely enriched our knowledge of the interior of Zealand, especially in Boreal and Atlantic times; for no less than sixty distinct sites were examined, some covering several periods, while the magnificent report in *Nordiske Fortidsminder*[2] summarises not only the work done here but other results. As a result of stratigraphical observations at some sites and a comparison of palaeobotanically dated assemblages, new details as to the evolution of the Maglemose culture emerge. The earliest stage, belonging to Jessen's Zone IV is so far known only from Klosterlund, in Jutland, and marks the typological starting point of the Gudenaa series. In Zealand, Mullerup, the eponymous site for the local facies, is also the oldest known site and belongs to Zone V. In this phase the blade technique is poorly developed and—in contrast to Jutland—microliths show little variety. Core-axes preponderate enormously over flake-axes and are mostly "asymmetrical" or "atypical." In Zone VII fall Svaerdborg, with its fine array of microliths, and the sites at Holmgaard.

Here subsequent excavations[3] have produced remains of an elm bow that must have been reinforced throughout its length with sinews, conical-headed arrows of wood, related to the well-known bone types of Kunda and the East Baltic, and slotted wooden points. The latter are the first tangible illustrations of the hypothetical weapons that were armed with microliths; for the careful blunting of the backs of these absurd pigmy flints would seem quite unnecessary if they were to be stuck in the familiar slotted bone points. In the same zone belong the sites of Kongsted and Øgaarde II, on Aamose, yielding assemblages that diverge from the standards previously recognised. The abundance of skew arrowheads and the superior blade technique brings the former site into line with the Gudenaa culture of Jutland rather than the Mullerup of Zealand. But at Øgaarde, besides these Gudenaa features, Mathiassen draws attention to peculiarities that might be attributed to a still quite hypothetical

[1] Iversen, "Undersøgelse over Litorina Transgressioner i Danmark," *Medd. Dansk. Geol. Fören.*, ix, 2, 1937; Troels-Smith, in "Dyrholmen," 162–7.

[2] Mathiassen, Degerbøl, Troels-Smith, "Stenalders Bopladsen i Aamosen," 1944.

[3] *F.N.A.*, 1945, pp. 63–6.

"coastal culture"—presumably a sort of ancestor of Ertebølle. The peculiarities are pebble axes (Trindøkse) narrow skew arrowheads, patterns deeply incised on bone, and perhaps pottery.

Now pottery in Denmark, in the Boreal period, would be an awkward fact for Diffusionists to explain, so that the evidence must be summarised. Øgaarde was originally a small holm rising very gently above the swamp. This low eminence was quite certainly occupied at many periods, down to the end of the Dolmen period at least. On its summit the relic-bearing deposits were only 50 cm. thick, and undivided by sterile layers. The scatter on the edge of the islet and out in the swamp was spread over a much larger vertical range but was naturally less prolific in relics. Excavation of the summit by 10 cm. layers therefore could not yield a sequence of stratigraphically distinct cultures, but did disclose four statistically different assemblages of types, termed I to IV. So the ratio of flake to core axes rose from 1 to 9 in I, up to 31 to 13 in IV, and that of transverse to skew arrowheads from 2 to 0 in I, 13 to 8 in II, to 95 to 6 in IV, while the percentage of other microliths fell progressively from 95 in I to 26 in IV. Potsherds were distributed as follows: 2 in I, 12 in II, 39 in III and 30 in IV. Obviously no conclusions can be drawn from two sherds at the base of such a thin deposit. But out in the moss sherds were found even under a peat layer attributed to Zone V. The most reliably located, however, was "not mixed with powdered granite" (the usual temper). Indeed, "there was no certain proof that it had ever undergone firing rather than merely sun drying." Boreal pottery, therefore, remains questionable. If such existed and were derived from a nascent coast culture, the sites of the latter, which should provide the proof, must have lain far out to the north-west and are now deeply submerged by the North Sea.

Nor is there really any more conclusive evidence for pottery in early Atlantic times. Geologically dated kitchen middens of the Ertebølle culture only begin in Zone VIIb about the time of the Mid-Atlantic transgression, save perhaps for Amager I.

One site of the coastal culture, Gisslinge Lammefjord, a holm on a former fjord in north-west Zealand, is botanically dated to the time of the first transgression. It yielded no pottery, but, like Bloksbjerg, several types more reminiscent of the Maglemosean. The culture here revealed cannot yet be labelled "Ertebølle"[1], but may represent its immediate precursor.

[1] So Mathiassen in "Dyrholmen," 66.

In the interior of Zealand the survival of the Maglemosean tradition in Atlantic times among the inland population is clearly illustrated by several sites on Aamose. Similarly, in the interior of Jutland the Gudenaa culture continued its rather solitary development through the Atlantic phase, and in South Sweden the microlithic industry of the Mörrumså culture (on the border between Blekinge and Småland), discovered by the late Knut Kjellmark,[1] seems to run parallel to at least the later Gudenaa phases.

The Ertebølle shell mounds[2] proper are now seen to be often composite deposits representing several periods of occupation and lasting into sub-Boreal times, when neolithic farmers were already clearing forest and building Dolmens, but going back often to the time of the Mid-Atlantic transgression. Subsequent transgressions have generally disturbed the early deposits so that no sharp stratigraphical horizons separate them. By the Mid-Atlantic transgression Ertebølle culture is fairly clear but again is only statistically defined. The assemblages termed Dyrholmen I, II and III are, in fact, juxtaposed rather than superimposed. While geological deposits corresponding to the Mid-Atlantic, Late Atlantic and sub-Boreal transgressions are recognisable, the relics actually found covered by, or embedded in, the first two are scarce and not very distinctive: pottery is not mentioned. The three cultures—or rather phases of Ertebølle culture—termed Dyrholmen I, II and III are the assemblages of relics concentrated in three distinct zones, of which III is the highest, running on to the arable land of Dyrholm, itself a superficially visible raised strand of the sub-Boreal transgression "whose waters covered Zones I and II." Dyrholmen III is geologically dated to the time of the sub-Boreal transgression, while archaeologically a few neolithic implements, and these not only thin-butted axes of Dolmen type but also a shouldered axe appropriate to the Separate Grave culture of the succeeding period, show occupation into Passage Grave times. Thin-walled pottery also predominates in this zone, though Ertebølle pots, as well as other Ertebølle types, occur. At Kolind four "zones" of relics are observed to overlap vertically, but the lower three had all been re-sorted, or at least covered, by subsequent transgression. (Zone II is intermediate between Dyrholmen I and II.) Here again neolithic types are confined to the latest, top

[1] "Stenåldersboplatser omkring Mörrumsäns," *Fornvannen*, 1944, pp. 257–79.

[2] Mathiassen, Degerbøl and Troels-Smith, "Dyrholmen: en Stenalderboplads paa Djursland," Det k. Dansk. Videnskabs Selskab., *Arkeol-Kunsthistor. Skrifter*, I, 1, 1942.

zone. In neither case is the evidence for pottery before the Mid-Atlantic transgression statistically impressive.

TABLE SHOWING THE DISTRIBUTION OF SOME SIGNIFICANT TYPES BETWEEN THE SEVERAL ZONES AT DYRHOLMEN

Type	*Zone I*	*Zone II*	*Zone III*
Sherds of pottery: coarse	11	787	7
Sherds of pottery: fine	0	19	29
Flint implements:			
Core-axes (total)	28 (9%)	93 (6%)	45 (7%)
Of these			
Unsymmetrical (1)	7	10	9
Unsymmetrical with special blade trimming (2)	0	5	3
Symmetrical—specialised	0	7	2
Flake-axes (total)	24 (8%)	571 (37%)	266 (43%)
Of these			
Symmetrical (side-trimmed) (3) ..	4	74	39
Symmetrical (face-trimmed) (4) ..	(?4)	310	42
Gravers	58 (19%)	177 (11%)	43 (7%)
Transverse arrow-heads	16 (5%)	198 (13%)	71 (11%)

Percentages of total flint implements in brackets.

(1) Danske Oldsager, I (1948), No. 56.
(2) Danske Oldsager, I (1948), No. 58.
(3) Danske Oldsager, I (1948), No. 65.
(4) Danske Oldsager, I (1948), No. 66.

The observations at both sites leave the evidence for pottery in Atlantic times statistically inconclusive, but confirm the value of the typology for mesolithic flint "axes" advanced by Troels-Smith in 1937. In this scheme the celt "with pointed butt"—once type fossil for Montelius' Neolithic I—is the culminating point in the development of the "core axe" series and therefore *later* than the earliest thin-butted axes. The series began with the "unsymmetrical" and "atypical" forms met already at Klosterlund and Mullerup.

Incidentally several "antler axes" were discovered still in posi-

tion on their shafts. These were supple hazel stems, 43 to 53 cm. long, but only 1·5 to 2 cm. thick, so that these axes would not be much use for chopping. Among the numerous animal remains from Dyrholmen Degerbøl identified a relatively large number of human bones, broken and split like those of other animals, and part of the skull of a child of ten that had been scalped; this is the earliest conclusive evidence for such cannibalistic practices in the West Baltic area, but subsequent excavations at Korsør Nor[1] have confirmed the practice of ritual burial by Ertebølle hunter-fishers. Here the body was buried extended, wrapped up in bark and probably lying on a bier.

The initiation of a new economic phase of farming early in the sub-Boreal, while the Ertebølle hunter-fishers still maintained their old food-gathering culture, is now proved not only by rare neolithic axes and stray sherds and isolated bones of domestic animals found with the predominating mesolithic remains in the latest zones at Dyrholmen and Kolind, but also by the forest clearance reflected in the pollen diagrams of Zone VIII. Iversen,[2] in 1942, first pointed out in several moors an exceptionally dense layer of charcoal followed immediately by a decline in the proportion of pollen of forest trees and a proportionate increase in the non-tree pollen, including the first appearance of the plantain (*Plantago*), a weed of cultivation, and even a little cereal pollen. This was followed by an increase of shrubs—birch, alder, hazel—and later still by a revival of Mixed Oak Forest. This is exactly how the regeneration of a forest that had been cleared mainly by burning would proceed. So the diagrams reflect the activity of Man as a new factor in the environment; farmers burnt off strips of forest to provide pastures for their cattle and plots for cultivation and then moved on, as is the custom with barbarous tribes who still practice slash-and-burn agriculture, or *jhumming*.

Round Dyrholmen Troels-Smiths finds evidence of two such clearances. The first fall of the oak wood curve and rise of herbs, *Plantago* and cereals, occurs at the very beginning of Zone VIII. Subsequently regeneration of the forest, as described by Iversen, set in while thin-butted axes were still current (Dolmen or early Passage Grave times). But later on, about the time of the last transgression, there is a second relative decline of tree pollen and rise in that of

[1] *F.N.A.*, 1943, pp. 6–10; the skull, which bears the marks of wounds, is said to be typically Nordic, but not to resemble the Cro-Magnon type so closely as does the first well-preserved and geologically dated skull of the Boreal period—"Koelbjergskelett: et Fund fra tidlig Maglemosetid," *Aarb.*, 1943, pp. 211–31.

[2] "Landnam i Danmarks Stenalder," *D.G.U.*, R. II, No. 66, 1941.

herbs and *Plantago*. This time there is no resurgence of the birch curve and relatively little regeneration. That might be understood if the second clearance had been effected more by felling than by burning, and if the cleared areas were browsed by numerous cattle who would eat up the young tree shoots. Now the shaft-tongue axe, found in the clay of the last transgression, is a type proper to the Separate Grave (Battle-axe) Folk, who are supposed to have invaded Jutland about the middle of the Passage Grave period. The second clearance horizon may then be evidence for their advent.

Accordingly, while hunter-fishers still preserved a classical Ertebølle culture at Dyrholmen and Kolind, farmers with a neolithic equipment were already clearing the soil of Denmark for tillage and grazing. The relationship between these contemporary but contrasted cultures has been clarified by Mathiassen's[1] masterly comparison of the materials collected from two domestic sites in Zealand, Havnelev and Strandegaard. Havnelev, situated on good agricultural land three kilometres from the coast, is a typically neolithic Dolmen settlement. It yielded 5 querns, bones of cow, sheep and pig, but very few of game animals, 28 polished thin-butted axes, sherds of 11 collared flasks, 211 funnel-necked beakers, 9 corded beakers and a polygonal battle axe—but also 153 flake axes; no Ertebølle pots and no core-axes were found. The famous Strandegaard house, on the contrary, lies on the shore close to a Litorina beach. No grain imprints nor querns suggest any sort of cultivation. Among the sparse animal bones, game are represented by seal, wild boar, red deer and dove; domestic stock only by cow. The relics included 74 core- and 323 flake-axes but only 4 thin-butted axes, bits of 22 Ertebølle jars and 10 blubber lamps; but 8 cord-ornamented beakers and 21 funnel-necked beakers. The clear contrast in economy and equipment is reinforced by reference to flint technique. The occupants of Strandegaard were masters of the sure blade technique characteristic of Ertebølle, while blades were relatively rare at Havnelev and of miserable workmanship. On the other hand, the common points in the two industries are so numerous that both must be assigned to the same archaeological period, viz. the Dolmen period. Strandegaard's occupants can perfectly well be regarded as descendants of the Ertebølle folk, influenced by neolithic neighbours. The contrast in the flint work should show that the latter must be a new people with quite distinct traditions.

If the cleft between the autochthonous mesolithic survivors and

[1] "Havnelev och Strandegaard," *Aarb.*, 1940, pp. 1–46.

the new neolithic farmers be emphasised by this study of domestic relics, the development of the latter's culture in Denmark within the Dolmen period has been clarified by Thorvildsen's[1] new analysis of the grave finds. The typologically oldest of these are confined to the islands and Southern Jutland; there alone collared flasks and amphorae, that both in form and decoration closely copy vessels of organic materials, occur in true rectangular Dolmens with four to six uprights. In North Jutland less skeuomorphic forms (e.g. collared flasks with biconical instead of globular bodies) and patterns (stab-and-drag, cord and even *cardium*) are found sometimes in more elaborate megalithic tombs—polygonal in plan and even provided with a rudimentary entrance passage—or in earth graves. Nineteen out of 26 of these "late Dolmens" and 36 out of 44 earth graves are situated in North Jutland. It is from these late graves that most thin-butted flint axes, amber beads and polygonal battle-axes have been recovered. The North Jutish collared flasks clearly show a development towards the forms current in the Huns' Beds of north-west Germany and Holland. Hence it is no use looking in that direction for the origin of the earliest neolithic types. Nor does the Polish version of what Jażdrzewski calls the Funnel-necked Beaker Culture provide more plausible prototypes. On the contrary, a newly discovered culture in Sweden is certainly relevant.

In Scania, as in Denmark, the Ertebølle culture persisted side by side with a new neolithic culture as shown by the excavations near Siretorp in Blekinge, published by Bagge and Kjellmark[2] late in 1939. After the Late Atlantic transgression farmers encamped on the sandy shore, leaving sherds of beakers and other pots ornamented with cord-impressions, and perhaps a saddle quern. Above the refuse they left and a later layer of blown sand, an encampment of Ertebølle hunter-fishers is represented by a thin deposit containing sherds of typical Ertebølle pots, Limnhamn axes and transverse arrow-heads. Thereafter farmers returned to the site, leaving similar cord-ornamented sherds, but also necks of three-collared flasks, a "polygonal" battle-axe and an arrow-shaft-straightener. Still later the site was occupied by people using Swedish "Dwelling Place" pottery, including the style represented at Saetter IV[3]—a dwelling-place dis-

[1] "Dyssetids Gravfund i Danmark," *Aarb.*, 1941, pp. 24–74.

[2] *Stenåldersboplatserna vid Siretorp i Blekinge,*" Lund, 1939.

[3] The authors suggested that this might have been merely a high tide such as was to be expected about 2100 B.C. Were this interpretation correct, it would give welcome astronomical confirmation for a traditional date for the Passage Grave period. But on the new Danish evidence, a transgression seems more likely.

turbed by the last, or sub-Boreal, transgression. In Scania, therefore, the Ertebølle culture was later than a neolithic culture with corded ware, and Bagge admits that there is no earlier evidence for Ertebølle pottery in Sweden. The Corded Ware culture of Siretorp recalls, on the one hand, the Vrå culture further north and east, on the other Virrings, in Jutland.

In Södermanland Florin[1] found cord-, together with comb-ornamented sherds (mostly very minute, but two belonging to collared flasks) in rectangular house foundations, together with "axes" (? adzes) and gouges of diabase, a polygonal battle-axe, a saddle quern, a few bones of ox and teeth of a small horse. Sherds bear imprints of bread wheat, emmer and barley grains and wild grape seeds. The last observation, of course, indicates the genial climate prevailing in East Sweden at the time of the settlements. Archaeologically they belong to the Dolmen period of the West Baltic, and in geological time, too, the related settlement in Blekinge must be contemporary with the Danish Dolmens. But the latest pollen-analyses are reported to show that the Vrå sites fall in a later phase of the sub-Boreal. And there are no Dolmens in East Sweden.

Of course Brøndsted assigned cord-ornamented beakers, like those from Scania and from a pit grave near Virrings, in Jutland, to a pre-Dolmen phase. His reason seems to be that some similarly shaped cord-ornamented beakers had been found in Ertebølle shell-mounds, sometimes bearing grain imprints. But since the Ertebølle culture has been shown to last into Passage Grave times there is no longer any reason for regarding these corded beakers as particularly early. Yet it may still prove that such beakers are memorials of the earliest farmers to reach Denmark and Sweden.

Of course cord ornament was by no means unknown on the pottery from actual Danish dolmens, as Forssander[2] insisted in 1936, but on the funerary pottery of the megalith-builders it was generally the whipped cord and arranged by preference vertically, and most samples seem late on Thorvildsen's division (the true corded beakers of Virrings' type lack distinctive associates). In any case, cord ornament was indubitably used extensively in the early sub-Boreal phase before the last marine transgression. This fact must clearly be related to the use of cord ornament in the British Isles, both on Neolithic A

[1] "Vrå kulturen," in *Kulturhistoriska Studier tillagnade Nils Åberg*, Stockholm, 1938.

[2] "Svensk Megalithkeramik och kontinental-europaisk Stenålder," *Årsber.*, Lund, 1935–36, p. 6.

(Beacharra) pottery and apparently on B beakers earlier than the Lyonesse transgression in Essex and the erection of a Long Barrow at Skendleby, in Lincolnshire. Herein, then, we have a hint, still rather obscure, on how the West Baltic and British culture sequences might be correlated and made to support each other.

In this connection it will be appropriate to report chemical analyses recently published of the celebrated hoard of copper objects found in a pot belonging to the late Dolmen or earliest Passage Grave period at Bygholm, Horsens in Jutland. The flat axes, dagger with unifacial midrib and spiral armband prove to be of very pure copper, considered to be native metal, which yet contained 0·30 per cent arsenic. Dr. Witter[1] maintains that this impurity proves that the metal was derived from Zwickau, Saxony. Witter subsequently analysed part of a dagger from Tomb 7 at Alcalá in Algarve (South Portugal), in which, as at Bygholm, a unifacially ribbed dagger was found. This, too, was made of copper containing 1·20 per cent arsenic as an impurity, so that the German metallurgist declares that the chemical composition of the two blades is practically identical (*fast identisch*). Wherever that metal came from, chemical analyses thus provide some support for a theory of trade relation between the Iberian Peninsula of the "Copper Age" and the Cimbrian in the first phase of the local New Stone Age, formulated twenty years ago on the strength of purely formal considerations.

Be that as it may, the new tomb type, the Passage Grave, still taken as defining the second Neolithic period in Jutland, the Danish Islands and Southern Sweden, has often been compared to the corbelled tombs of Alcalá and Los Millares. But the furniture of the Passage Graves, though clearly indicating a breach with the earlier tradition, has nothing Western about it. Mathiassen[2] has proposed a new chronological subdivision of the material from this substantial period. It is based not on the finds from collective tombs, where the furniture belonging to successive interments can seldom be distinguished, nor yet on typological and stylistic considerations, but on a comparison of the relics from five settlements—Trøldebjerg,[3] Blandebjerg,[4] Trelleborg,[5] Bundsø[6] and Lindø[7]—and thus continues the

[1] Quoted by Oldeberg, *Metallteknik under forhistorisk Tid*, Lund, 1942–3.
[2] *Acta Arch.*, XV (1944), pp. 88–91.
[3] Winther, *Tröldebjerg*, 1935; *Tillaeg*, 1938.
[4] Winther, *Blandebjerg*, 1943.
[5] *Acta Arch.*, XV, pp. 80 ff.
[6] *Aarbøger*, 1939.
[7] Winther, *Lindø*, 1926.

series initiated by the earliest Neolithic site of Havnelev. These, though not stratified, each yielded a distinct, but internally coherent, assemblage of relics. Mathiassen assumes plausibly that each was occupied for a short time only; then the settlers removed to another site, presumably because the soil had become exhausted. (It is to be inferred that the old family sepulchre must have been still used.)

The oldest assemblage at Trøldebjerg includes pottery decorated as before with whipped cords, but also with the edge of a *Cardium* shell (Sophus Müller's Grand Style), battle axes of Fredsgaarde type and thin-butted flint axes. The general contrast with Havnelev and, in particular, the absence of polygonal battle-axes and corded beakers refutes both those who, like Daniel,[1] wish to suppress the Dolmen period altogether and those who, with Rydbeck,[2] would transfer the battle-axes and corded beakers to the Passage Grave phase. The pot forms, notably pedestalled bowls and socketed ladles, clearly betray influence from the Lengyel culture of Danubian II in Central Europe.

First at Blandebjerg appear thick-butted and sharp-butted axes, stone "double axes," disc-shaped mace heads, and "Walternienberg" vases. The latter again show the strong influence exercised by Central Europe on the North, and Glob,[3] indeed, thinks that in Zealand invaders from Saxo-Thuringia may have cleared out and re-used the passage grave of Korshøj (Zealand).

It was not before this phase that the Separate Grave culture emerged in Jutland. To it Glob[4] has devoted a valuable monograph incorporating the latest observations. This does not seriously modify the general picture, presented by Sophus Müller fifty years ago. But improved excavation technique has disclosed structural features—plank cists, encircling trenches—that have become familiar in connection with "battle-axe" burials in South Russia, Central Russia, Finland and elsewhere, and have recently been recognised in English round barrows. Glob denies that this culture in Jutland can be directly descended from that defined by the corded beakers of Virrings and Vrå. For the earliest recognisable Separate Graves (*Untergrave*) are separated from the latter by the time interval occupied by the Trøldebjerg phase of the Megalithic culture. Moreover, while the

[1] *Proc. Prehist. Soc.*, 1941, pp. 21 ff.

[2] *Arsber., Lund*, 1937–38, pp. 95–104.

[3] In *Fra Danmarks Ungtid* (Brøndsted Festschrift), Copenhagen, 1940, pp. 73–89; the vases belong to the end of the first of Niklassen's five typological stages in the Walternienberg–Bernberg culture.

[4] *Aarb.*, 1944.

earliest Separate Grave axes are as distinctly metallic (most show a longitudinal ridge imitating the seam of a casting) as are polygonal battle-axes, the blades of the former are splayed asymmetrically (downwards only), those of the latter symmetrically. On the other hand, in Sweden Florin's map shows that the distribution of polygonal battle-axes, attributed to his Vrå culture, coincides fairly closely with that of boat-axes—the Swedish counterparts of the Jutland Separate Grave axes. The origin of the Separate Grave culture thus remains one of the outstanding questions for Northern prehistorians.

ABBREVIATIONS

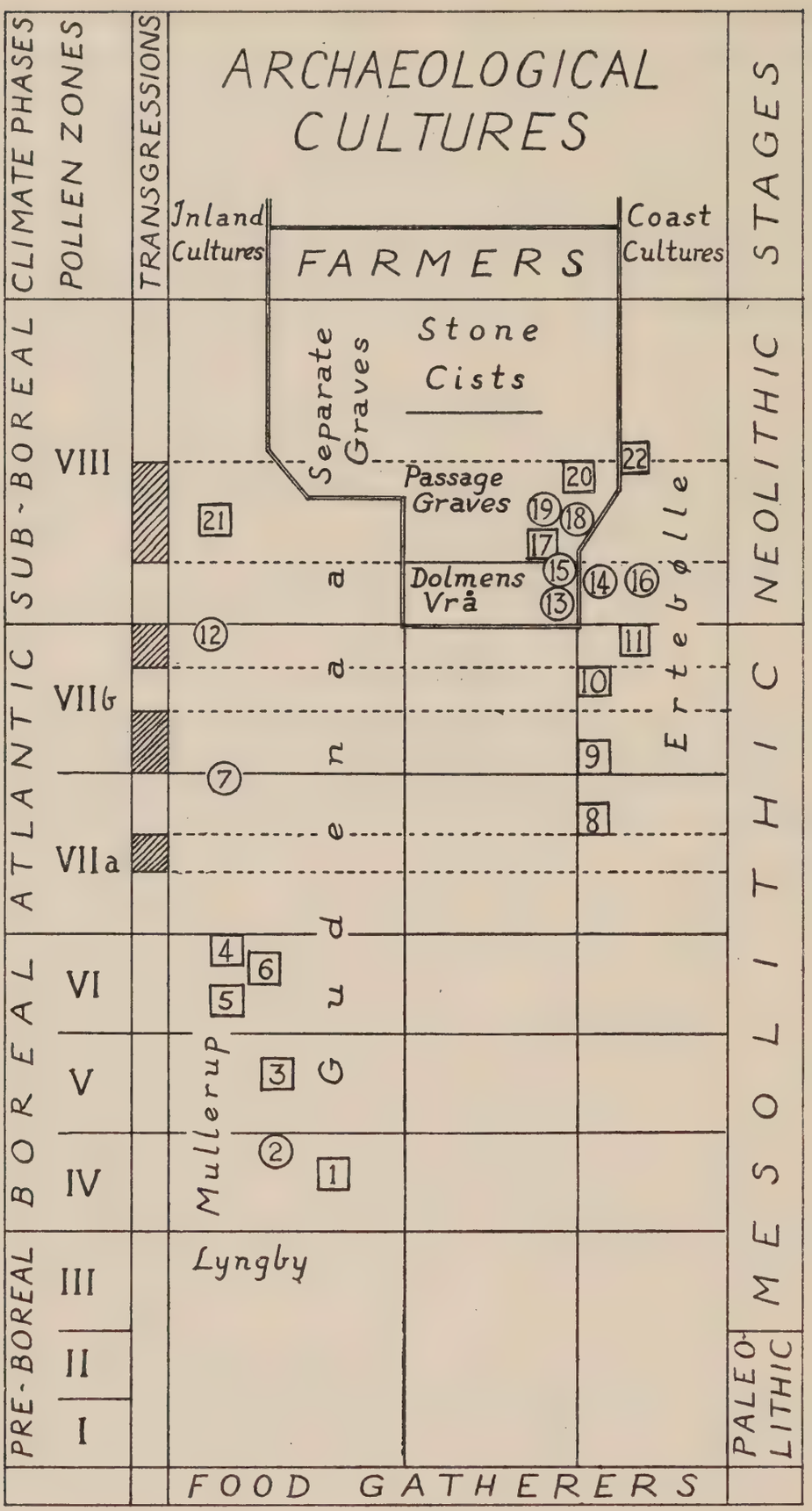
Aarb., Aarbøger for Nordisk Oldkyndighed og Historie, Copenhagen.
Årsber., K. Humanistiska Vetenskapssamfundet i Lund, *Årsberättelse* (*Medd. fran Lunds Universitets Historiska Museum*).
D.G.U. Danmarks Geologiske Undersøgelse, Copenhagen.
F.N.A. Fra Nationalmuseets Arbejdsmark, Copenhagen.

ADDENDUM

By July, 1948, continued excavation in Aamose and other mosses has produced evidence for pottery (including cord-ornamented beakers but not collared flasks) dating back to the time of the penultimate, or Late Atlantic, transgression and has thus justified, after all, Brøndsted's attribution of Virrings to a pre-Dolmen "Neolithic I."

EXPLANATION OF TABLE

Pollen-dated sites enclosed in squares.



1 Klosterlund
2 Øgaarde I
3 Mullerup
4 Holmgaard
5 Svaerdborg
6 Øgaarde II
7 Kildegaard I
8 Gislinge-Lammefjord
9 Dyrholmen I
10 Dyrholmen II
11 Alstrup II Samsø
12 Kildegaard II
13 Siretorp "S"
14 Siretorp "E"
15 Havnelev
16 Strandegaard
17 Trøldebjerg
18 Blandebjerg
19 Trelleborg
20 Bundsø
21 Magleø II
22 Dyrholmen III

22 Dyrholmen III
21 Magleø II
20 Bundsø
19 Trelleborg
18 Blandebjerg
17 Trøldebjerg
16 Strandegaard
15 Havnelev
14 Siretorp "E"
13 Siretorp "S"
12 Kildegaard II
11 Alstrup II Samsø
10 Dyrholmen II
9 Dyrholmen I
8 Gislinge-Lamme
7 Kildegaarde I
6 Øgaarde II
5 Svaerdborg
4 Holmgaard
3 Mullerup
2 Øgaarde I
1 Klosterlund

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In accordance with the wishes of the majority of subscribers, it was decided that the fund collected in memory of Tessa Verney Wheeler should be devoted, after the provision of the tablet in the Library of the Institute, to the establishment of a bursary for the assistance of archaeological students. The capital, amounting to £569, has been invested in the name of the Society of Antiquaries of London, and the interest will be devoted to this object. The administration is in the hands of a committee appointed partly by the Society of Antiquaries and partly by the Institute of Archaeology. The object of the bursary is to give assistance to students in archaeological studies in any way which may appear most useful to the committee. It may, for instance, be given for travel for the purpose of research, for the purchase of books and equipment, or for assistance in living expenses during excavations or while pursuing a course of study. The bursary may be divided among a number of students, or given to one only, or it may not be awarded at all in a particular year, if there is not a suitable candidate.

It is realised that the amount available is not large, but it is felt that even small grants will often make a great deal of difference to some students. Everyone would agree that the use of the fund in this way would have been in accordance with Mrs. Wheeler's wishes, and it is hoped that once a fund such as this has been started, it may form a nucleus to which additions may from time to time be made.

Teachers or field-workers who hear of suitable candidates should apply to the Secretary of the Society of Antiquaries, Burlington House, W.1.

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